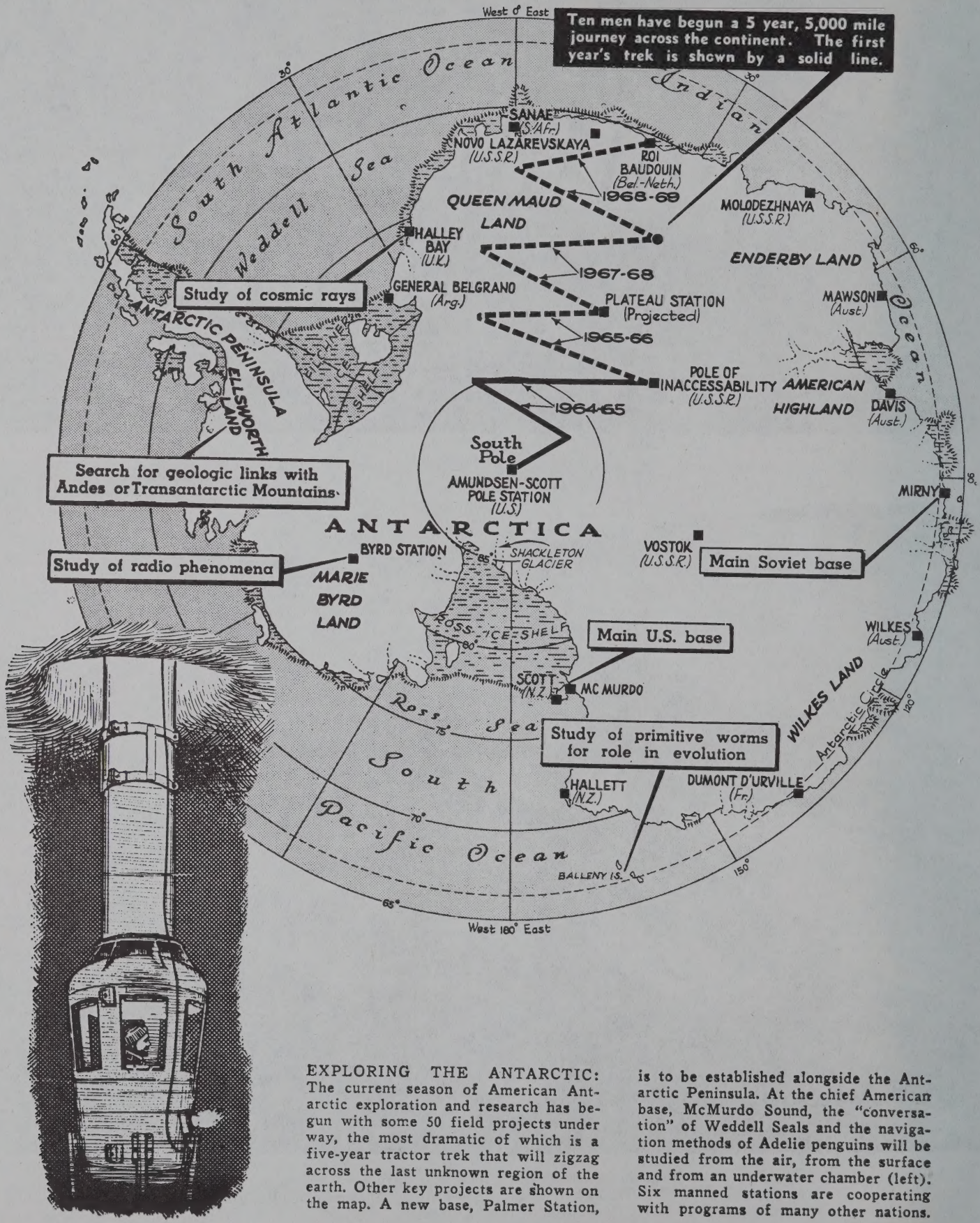
# THE POLAR TIMES

MOUNT EREBUS in the Antarctic has been found to be 12,280 feet high during a recently completed survey. The height of this smouldering volcano was first computed during an expedition 1910-1913 to be 13,200 feet.




EXPLORING THE ANTARCTIC: The current season of American Antarctic exploration and research has begun with some 50 field projects under way, the most dramatic of which is a five-year tractor trek that will zigzag across the last unknown region of the earth. Other key projects are shown on the map. A new base, Palmer Station, is to be established alongside the Antarctic Peninsula. At the chief American base, McMurdo Sound, the "conversation" of Weddell Seals and the navigation methods of Adelie penguins will be studied from the air, from the surface and from an underwater chamber (left). Six manned stations are cooperating with programs of many other nations.

# The Polar Times

Copyright 1964 by the American Polar Society

No. 59. DECEMBER 1964.

## Polar Study

By WALTER SULLIVAN

Dec. 13

The New York Times

Eight Americans, a Belgian and a Norwegian are working their way slowly into the largest unexplored region on earth. They are riding three tracked vehicles, known as Sno-cats, having left the South Pole on Dec. 4. Since travel is feasible only in the Antarctic summer, it will be five years before the vehicles will have traveled a 5,000-mile zigzag route to the coast as shown on the map at left.

The journey is part of this nation's large-scale effort in the Antarctic during the coming Southern summer, which coincides with winter in the Northern Hemisphere. As the United States enters its second decade of continuous activity in the Antarctic, some 50 scientific projects are being carried out in the area at a cost, to the National Science Foundation, of about $7,000,000.

Additional work is being done by the Soviet Union and other participants in the cooperative Antarctic program. The studies relate to questions as diverse as penguin navigation, seal "language" and a strange radio phenomenon known as "dawn chorus."

The goal of the tracked vehicles, for this summer, is the region of the Antarctic mainland most distant from the sea—the so-called Pole of Inaccessibility. The vehicles will be cached there for the winter and the party flown out.

Next summer the vehicles will be driven to a new semipermanent station, to be established by airlift on the great ice plateau near the center of the unexplored region. The latter is roughly as large as all the United States west of the Rocky Mountains.

The third summer is to be devoted to local journeys from this all-year station. It will then take two more summers to complete the journey to a Belgian-Dutch research station on the coast.

It is unlikely that the explorers will see new mountain ranges en route, for they will be traveling over an ice sheet that, in many places, is more than two miles thick. However, by setting off explosions and recording echo times, they will obtain the first clues to the buried topography.

The profile of the landscape thus obtained should link up with a Soviet profile that extends from Mirny, the main Soviet base, to the Pole of Inaccessibility.

Perhaps the most novel feature of the over-all American program is the use of an underwater chamber (shown in drawing at right) to eavesdrop on seals.

The study is concentrating on Weddell seals, which excel all other seals in the variety, power and frequency of the sounds they make. The Weddell is very large, running to 11 feet in length and 1,300 pounds in weight. It lives along the coast of the Antarctic continent, breathing air by poking its head through holes in the ice. Whether its sounds are for locating food, for communication, or both, is uncertain.

The underwater chamber is part of a structure that is built like a large spar buoy. A weight at the bottom keeps the structure upright. The upper part extends through the hole in the ice, providing access to the listening chamber.

Hydrophones in the water are wired to loudspeakers inside the chamber, which is far enough below the bottom of the five-foot bay ice to afford a clear view in all directions. The observers report that they can hear the distant sound of a seal getting louder and louder—whistling, buzzing, beeping or chirping. When it reaches maximum volume the animal appears, glares through the glass at the intruder and swims away.

Sometimes the seals take their fresh air through the hole blasted for lowering the chamber.

A string of hydrophones, suspended to the bottom of the McMurdo Sound, 1,000 feet below is being used to see if the seals, like bats, use sonar to catch their dinner in the lightless depths. They are known to feed near the bottom.

Particularly mysterious is how they find their breathing holes after long swims. These problems are being investigated, both from the chamber and by scuba-diving scientists from the Woods Hole (Mass.) Oceanographic Institution and the New York Zoological Society.

Another study will explore the suspicion that Adelie penguins navigate by the sun. In Antarctica, during the summer, the sun remains low in the sky, moving around the horizon like a clock hand. It is thought the birds have some means of correlating time and sun direction to get their bearing.

Another major part of the American program is the establishment of a new coastal station. This one, on Anvers Island off the Antarctic Peninsula, is to be called Palmer Station in honor of the young sea hunter thought to have been the first American to sight Antarctica.

It will be the first American base in that sector of Antarctica since 1948. The region is claimed by three countries: Australia, Britain and Chile. The Americans, with consent of its builders, will use a British hut to house their laboratory.

A wide variety of studies will center on peculiar, very low frequency radio emissions that appear to come from—or via—nearby space. These include such phenomena as the "dawn chorus," "whistlers" and "hiss." If they were better understood, they might enable scientists on the ground to know what is happening hundreds of miles overhead.

## *U.S. Expert Hails Soviet Cordiality in Antarctic*

### *Texas Microbiologist Says He's Very Busy—Hookup Relays Words to Russia*

The New York Times

MOSCOW, Dec. 13—A United States scientist stationed at the Soviet Union's Antarctic base of Mirny took part this weekend in an unusual radio news conference arranged for newsmen in Moscow.

Speaking over an 8,000-mile radio-telephone hookup, Dr. George H. Meyer, a microbiologist from the University of Texas in Austin, said he was enjoying his stay at Mirny, where he expects to remain through next year.

"The Russians have received me cordially," Dr. Meyer said. "I found much work to do and I found many microorganisms here which I'll be able to study for the entire year."

Dr. Meyer said he hoped to visit other Soviet research stations during his stay. In addition to Mirny, which means "peaceful," the Soviet Union operates the Vostok station inland and the Molodezhnaya and Novo Lazarevskaya stations on the coast.

Living conditions at Mirny were described by Dr. Meyer as "not exotic but very comfortable."

"We have a fine home here," he said.

The news conference was arranged yesterday by the State Committee of Cultural Relations with Foreign Countries and by the Hydrometeorological Service, the Soviet Government's weather bureau.

Most of the 50 questions, submitted earlier by newsmen and transmitted to the Antarctic by radio, were answered by Dr. Pavel Senko, director of the Mirny station. His voice was often drowned out by atmospheric interference as it came over loudspeakers in the auditorium of the Teachers Club in downtown Moscow.

Dr. Senko, who is a geographer, said present Russian personnel in the Antarctic taking part in the 10th annual expedition there would be relieved next month with the arrival of supply ships from home.

The Soviet Union and the United States have been exchanging scientists and collaborating in many other ways for the last several years in the Antarctic.

Dr. Senko, noting that the average age of Soviet personnel at Mirny was 35, said, "we are very unfortunate," when asked why there were no women at the base.

# SCIENTISTS PLAN ANTARCTIC STUDY

## Teams Leave in December on Varied Field Projects

The New York Times

WASHINGTON, Sept. 12 — An international team of scientists will set forth this December on the first leg of a four-year expedition into the last unexplored region of Antarctia.

Other teams of scientists will dive into the frigid Antarctic water to explore marine life first hand, tag penguins with radios to learn more about their homing instincts, listen to seals with hydrophones to determine if the animals have a natural sonar mechanism, and lay down a 10-mile-long antenna to send artificial whistler" radio signals singing through the earth's magnetic field.

These are among some 50 field projects planned by the United States during the Antarctic summer, from October to March. The details were announced today by the National Science Foundation, the Government agency responsible for financing and coordinating the research.

About 150 United States scientists will undertake the field projects. Thirty-five of them will remain "on the ice" through the long, dark winter.

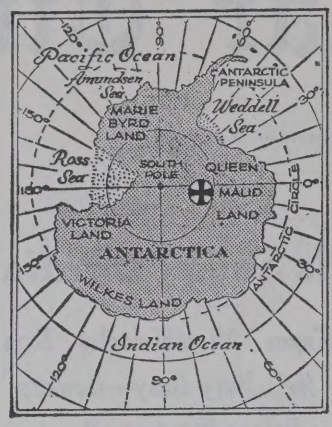
Probably the most dramatic and ambitious project in the $7 million research program is a traverse into the vast, windy, ice-covered plateau between the South Pole and Queen Maud Land on the coast nearest Africa.

The traverse will help to map an unexplored region about the size of the United States west of the Rocky Mountains. The scientists will examine the icecap, more than two miles deep in places, study the geology of any mountains that may be discovered and make observations of the ice, the weather and the earth's magnetic field.

A 5,000-mile, zig-zag trip across the region is planned. Because of the length and the difficulty of travel through the region, the traverse is being split into four two-month stages for successive Antarctic summers.

On the first leg, the scientists hope to cover more than 1,200 miles. They will leave the South Pole Station in large tracked vehicles and hope to reach the vicinity of the "Pole of Inaccessibility," the point deepest in the inhospitable interior of Antarctica, by January.

The traverse will be directed by Dr. Charles R. Bentley, a university of Wisconsin geophysicist. Other members of the ten-man team will include scientists from Belgium and Norway.




The New York Times Sept. 13, 1934

Scientists at Pole to map unexplored plateau (cross).

Scientists from The Johns Hopkins University will examine the homing instinct and direction-finding ability of the Adelie penguins. Tiny radio transmitters will be attached to the birds, who will be taken far from their breeding grounds. From aircraft, the scientists will track them as they waddle home across the icecap.

Scientists from the Woods Hole Oceanographic Institution will try to determine if Wedell seals have a sonar mechanism to locate food and holes in the dark. The scientists will measure the sounds made by the seals as they swim in McMurdo Sound.

Using scuba diving gear, three teams of scientists will observe marine life in McMurdo Sound. Biologists of the New York Zoological Society will photograph swimming seals.

Botanists from Harvard University and Old Dominion College of Virginia will study marine algae and collect specimens for laboratory study.

Atop the ice near Byrd Station, engineers from the University of Washington will lay out a 10-mile-long antenna in an attempt to duplicate the very low-frequency "whistler' radio signals that are generated by lightning flashes.

The "whistlers," so named for the sounds they make on radio receivers, bounce back and fourth between the Antarctic and Arctic along the geomagnetic lines of force. They thus provide an indirect way to study the properties of the outer reaches of the earth's magnetic field.

Most of the research projects will take place in the vicinity of the permanent United States stations in Antarctica. This season, Navy Seabees will construct another permanent station on Anvers Island near the Antarctic Peninsula.

The new base will be known as Palmer Station, after Nathaniel Palmer, an early American explorer. It is being established to give geologists access to exposed rock in the peninsula area and biologists access to an area where plant and animal life is relatively abundant in the frozen continent.

In their winter-long stay at the new base, biologists from Hawaii's Bishop Museum will study the flora and fauna of the island. Scientists from Ohio State University will study meteorology and the movements of the icecap and glaciers that cover most of the island.

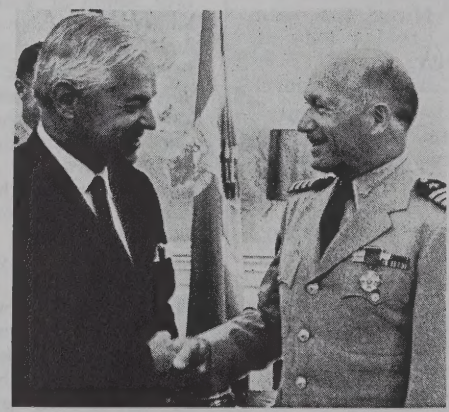
As part of the cooperative international research, some American scientists will work at Argentine and New Zealand stations and at the Soviet base Mirnyy. Scientists from Australia, West Germany, South Africa, the Soviet Union and Japan will do research at United States stations.

### 2,500 Going to Antarctica

NORFOLK, Va., Sept. 29 (UPI)—The Navy's tenth annual Operation Deepfreeze will put 2,500 men and nine ships in Antarctica, it was announced yesterday. Rear Adm. James W. Reedy will command Task Force 13 in the Navy's portion of the operation, a support job for National Science Foundation scientists who study the south polar regions. The project will begin in December and end in April, 1965.

### Snow Storm Hits McMurdo

CHRISTCHURCH, New Zealand, Sept. 16 (Reuters)—A spring snow storm damaged huts and halted all outdoor activities at the United States McMurdo Station in Antarctica early this week. Eighty-knot winds toppled power poles.



**POLAR CITATION**—Navy Secretary Paul H. Nitze congratulates Capt Finn Ronne, USNR-Ret., after presentation of Legion of Merit. Captain Ronne was cited for his contributions to Antarctic exploration, during which he mapped about 450,000 square miles of South Pole terrain in six expeditions, and discovered islands and mountain ranges on the frozen continent.

**The Polar Times**

Published June and December by the
AMERICAN POLAR SOCIETY,
Care August Howard, Secretary,
98-20 62nd Drive (Apt. 7H),
Rego Park 74, New York.

AUGUST HOWARD, Editor

THE POLAR TIMES highly recommends "The Polar Record," published by the Scott Polar Research Institute, Cambridge, England.

The American Polar Society was founded Nov. 29, 1934, to band together all persons interested in polar exploration. Membership dues are one dollar a year, which entitles members to receive THE POLAR TIMES twice a year.

Back issues are 50 cents each.

**American Polar Society**

ROBERT A. J. ENGLISH
REAR ADMIRAL, U.S. NAVY (RET.)
*President*

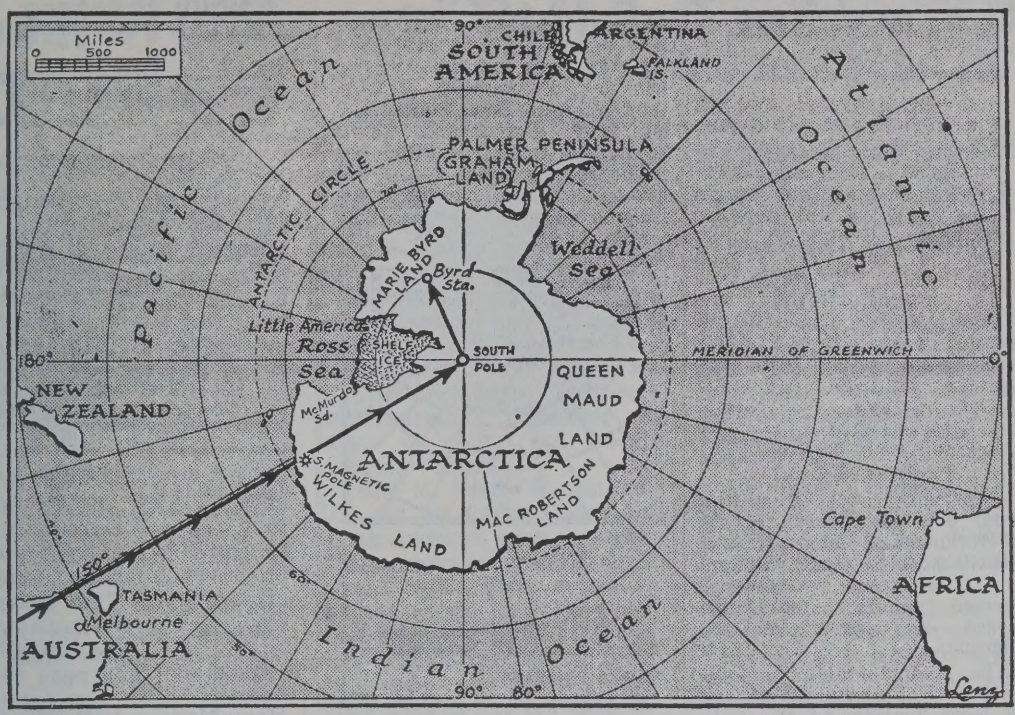
DR. THOMAS C. POULTER
CAPT. FINN RONNE, U.S.N.R
DR. JOHN H. ROSCOE
*Vice Presidents*

AUGUST HOWARD
*Secretary*

WILLIAM BRIESEMEISTER
*Treasurer*

*Board of Governors*

DR. WALLACE W. ATWOOD, JR.
LOUISE A. BOYD
DR. MEREDITH F. BURRILL
R. ADM. GEORGE DUFEK, U.S.N.
HERMAN R. FRIIS
DR. NEIL D. JOSEPHSON
CAPT. EDWIN A. MC DONALD, U.S.N.
COMDR. ALTON B. MOODY, U.S.N.R.
COMDR. DAVID C. NUTT, U.S.N.R.
DR. PAUL A. SIPLE
CHARLES H. STOLL
WALTER SULLIVAN
PROF. EDWARD C. SWEENEY
R. ADM. CHARLES W. THOMAS, U.S.C.G.
BRADFORD WASHBURN




By Russell H. Lenz, Chief Cartographer — *The Christian Science Monitor*

# *Antarctic Flight Breaks Record*

**By Albert E. Norman**

*Australia-New Zealand Correspondent of The Christian Science Monitor*

**Sydney, Australia**

The first direct flight from Australia to the Antarctic has been successfully completed. A United States Navy Hercules aircraft reached the South Pole in 12 hours from take-off at Avalon airforce base in Victoria States.

This historic flight was led by Rear Admiral James R. Reedy, Commander of the United States Navy Antarctic Support Force.

The first leg of the flight covered 3,600 miles to the South Pole. But when bad weather closed the United States base at McMurdo Sound, the planned Antarctic touchdown, Admiral Reedy ordered a diversion to Byrd Station in Marie Byrd Land.

This second leg brought the total distance to 4,420 miles, the longest flight in Antarctic history. Flight time was 15 hours 39 minutes.

In flying along the 150th meridian, broadly speaking, the United States Navy aircraft passed over the south magnetic pole long before it reached the south geographic pole. The magnetic pole is located near the head of the Mertz Glacier on the Antarctic coast.

Back in 1909, Prof. T. W. E. David of the British Shackleton expedition fixed the position of the magnetic pole approximately 400 miles southeast of its present location.

Owing to the mobility of this particular pole, its position is determined every five years from the latest data. Strangely, within about 1,000 miles of this pole, magnetic compasses are not reliable. They just swing aimlessly.

United States Navy fliers in the Antarctic use a grid navigation system. This was developed to avoid problems of navigation where in the converging meridians of the polar region all directions are north.

This system provides an artificial north, south, east, and west, using charts with a Mercator projection. If required, these points can be easily converted to true headings. Once it entered the Antarctic, Admiral Reedy's aircraft would be plotted on "grid."

Since the flight was made from Australia, the United States aircraft approached the polar continent on its southwest Pacific front. Hydrographers do not recognize a "Southern Ocean," since there is no single basin for such a major body, and Admiral Reedy's course lay across a series of minor basins.

The Hercules carried heavy duty skis, weighing 7,500 pounds, fitted to its tricycle landing gear. Antarctic operations permit a maximum payload of 32,200 pounds for the Hercules. Admiral Reedy's ship carried extra fuel in special cabin tanks. This fuel added more than 1,100 miles to the aircraft's designed maximum range.

Not fuel, but weather was the greatest problem faced in this long flight, as is clearly seen in the last-minute diversion to Byrd Station. Byrd has a 14,000-foot ice runway quite capable of taking the Hercules.

There are very few stations in the Antarctic to provide weather forecasts for such a long flight. Wind speeds are the central problem, sometimes reaching hurricane force.

Antarctica is regarded as the world's driest continent with an annual precipitation as low as 3 inches. Accordingly, Antarctic blizzards are mostly fairly old stocks of granulated snow being blown from one place to another. But the sudden speed at which these stocks can be shifted around is a major "X" factor in Antarctic weather forecasting.

Australian shore stations and United States Antarctic stations maintained radio contact with Admiral Reedy's aircraft. Over the South Pole Station, the ship dropped mail to the 22 Navy men who man this world's southernmost habitation. The pole surface temperature was —65 degrees F.

One year ago, Admiral Reedy led a similar long distance Antarctic flight launched from Cape Town, terminating at McMurdo Sound. This was a two-plane formation which covered the 4,099 miles in 14 hours 31 minutes, a shorter distance than the latest Australia-Antarctic flight.

Admiral Reedy has demonstrated in these long range flights that any United States station in the Antarctic could be supported by air from Africa or Australia. No attempt has been made for such a flight from South America.

This long range air support capability is a far cry from 1946. That year the USS Philippines Sea launched six twin-engine Navy aircraft close to the Antarctic coast to provide the first solid wedge of Navy aviation on a permanent work basis in Antarctica.

## BIG NAVY PLANE BLAZES A TRAIL TO ANTARCTICA

BYRD STATION, Antarctica, Sept. 30 (Delayed) (AP)—A U. S. Navy transport plane touched down safely today after a 4420-mile journey to frozen Antarctica—the first from the continent of Australia and the second longest in Antarctic aviation history.

The ski-equipped 65-ton Hercules was scheduled to land at McMurdo Base after the trip from Melbourne but was rerouted to Byrd Station because of bad weather. It carried a 14-man crew.

The 15-hour and 39-minute flight was made over the South Pole, where 22 U. S. scientists and Navy men are staffing Amundsen-Scott Research Station. The Hercules parachuted a 50-pound package of mail to the station.

The pilot of the epic journey was Commander Fred Gallup, 41 Bruce Lane, Warwick, R. I.

## *U.S. IS ESTABLISHING 6TH ANTARCTIC POST*

WASHINGTON, Aug. 21 (AP) — A new research station will be established by the United States in the Antarctic early next year as part of the nation's continuous drive "to discover the secrets of the world's least-known continent." It will be the sixth United States station on the continent.

It is to be situated in a region where, ages ago, penguin stood as tall as men.

Announcing this today, the National Science Foundation and the Defense Department said that the station would be on remote Anvers Island near the Antarctic peninsula that juts toward South America.

The mountainous island, about the size and shape of Rhode Island, is about 700 miles due south of Cape Horn and more than 1,700 miles from the South Pole.

The outpost will be called Palmer Station in honor of Nathaniel Palmer, an American seal hunter who pioneered in exploration of the region in 1820-21.

## ANTARCTICA TREATY HAILED BY JOHNSON

WASHINGTON, Sept. 2 (AP) —President Johnson told Congress today that the international treaty providing freedom of scientific investigation in Antarctica served as "a positive step toward a peaceful world."

He called it an outstanding example of cooperation between nations.

Mr. Johnson sent to Congress a special report on United States policy and international cooperation in Antarctica.

He said that, in 1963, this country had sent two inspection teams to examine the facilities in Antarctica of six other nations and had found no violations of the treaty.

The treaty prohibits nuclear explosions in Antarctica and the disposal there of radioactive waste.

Mr. Johnson said preoccupation with world problems "should not obscure situations like Antarctica, where this country and others work together harmoniously to construct the prototypes of peace."

On Antarctica's icy wastes, scientists visit freely between their various national installations, sometimes spending an entire year working with their counterparts from other countries, he said.

He added that many important expeditions had been completed and lives saved in time of danger because of timely assistance from other national stations.

## Weather Prevents Pick-up Of Ballots at South Pole

CHRISTCHURCH, New Zealand, Nov. 2 (Reuters)—A group of United States Navy men serving with operation Deep Freeze at the Amundsen-Scott South Pole Station were prevented by bad weather today from casting votes in tomorrow's Presidential election.

Although absentee ballot papers were dropped to the 22 men early last month, extremely low temperatures made it impossible for a plane to land so that the completed ballots could be picked up.

A Navy spokesman at Christchurch's Harewood base said a plane was expected to try to collect the votes this week for mailing to the United States.

### Copter Crashes in Antartica

CHRISTCHURCH, New Zealand, Nov. 9 (Reuters)—An American Army helicopter crashed while attempting to land on a 13,400-foot peak in Antarctica Sunday, but no one was injured, it was reported here today. An Army enlisted man, two scientists and the pilot were picked up by another helicopter and flown 40 miles to Halleett Station.

# *U.S. and New Zealand to Close A Joint Station in the Antarctic*

### *2 Nations Have Operated the Scientific Base at Cape Hallett for Nine Years*

The New York Times

AUCKLAND, New Zealand, Oct. 24 — The joint American-New Zealand base at Cape Hallett will close at the end of the coming Antarctic summer after nine years of fruitful collaboration in scientific research.

Cape Hallett station is at the entrance to the Ross Sea, about 400 miles north of the McMurdo-Sound base. It was established in 1956 and throughout its existence it has been manned jointly by United States and New Zealand scientists.

The Hallett station is in a sector of the Antarctic claimed by New Zealand as the Ross Dependency, a claim which the United States does not recognize. Such a situation could have caused friction and disputes.

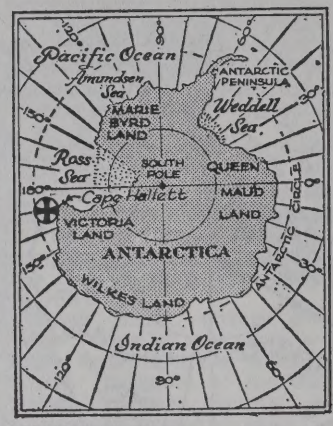
Instead, co-operation has been extremely close and friendly. Scientific leadership at Hallett has alternated each year between Americans and New Zealanders.

Hallett was established primarily for auroral and ionospheric research as well as to provide meteorological data. Numerous scientific programs have been carried out there, including studies of the Adelie penguins, which have an exten-

Commenting on plans to close the station, the New Zealand Prime Minister, Mr. K. J. Holyoake, said: "The withdrawal of the New Zealand scientists will end one of the most unusual but successful experiments in international co-operation in the Antarctic."

Automatic instruments will continue to provide navigational and meteorological facilities at Cape Hallett.

The closing of the station will by no means end United States-New Zealand co-operation which will continue in the wider field of Antarctic research generally.




The New York Times Oct. 25, 1964
Cape Hallett base (cross).

An agreement signed in 1958 set forth arrangements that had been in existence for several years. Under this agreement, New Zealand extends to the United States the use of dock facilities at Lyttelton and Dunedin, the two main South Island ports, and the use of airfield facilities at Harewood Airport, Christchurch. Here the United States has built an extensive permanent base as aerial gateway to the Antarctic.

The United States, in return, provides much logistic support for New Zealand Antarctic expeditions. Also, in 1962, the United States made available to New Zealand for five years on loan a diesel-electric tanker that, under the name HMNZS Endeavour, has become the New Zealand naval supply ship for its Antarctic operations.

Further co-operation is supplied by the New Zealand Navy, which during the flying season maintains frigates in the far south for weather reporting, escort and rescue operations as required.

Mutual assistance, without precise accounting of comparative contributions, extends to many other spheres of Antarctic activities.

## New Ice-Chipping Vehicle To Cut Roads in Antarctica

WORCESTER, Mass. (Science Service)—A new ice-chipping vehicle has been built to help carve out roads through solid ice in Antarctica.

The machine, powered by a 140 horsepower engine, will be used to cut a road network at McMurdo Sound. The new roads will enable conventional rubber-tired trucks to replace slow-moving tractor-type vehicles there.

The machine, which can remove eight inches of solid ice in a single pass, was built by Weldex, Inc., Worcester, for use by the United States Army Cold Regions Research Laboratories.

### British Retrace Polar Route

MONTEVIDEO, Uruguay, Nov. 3 (AP)—Ten British explorers left here Nov. 1 aboard the specially equipped vessel Protector on an expedition to Antarctica. They will try to retrace the route over the frozen wastes covered in 1916 by Sir Ernest Shackleton. The expedition is sponsored by the Royal Geographical Society and Cambridge, Birmingham and London Universities.

## 3 Navy Tractors Lost in Polar Fire

*United Press International*

HONOLULU, Oct. 14—Fire broke out in a garage at South Pole Station early today and destroyed three United States Navy snow tractors, according to Pacific Fleet headquarters here.

The 22 men based at the Amundsen-Scott station fought the fire in temperatures of 67 degrees below zero before finally bringing it under control.

Rear Adm. James B. Reedt, commander of the Navy's antarctic support force in Christchurch, New Zealand, ordered an investigation and immediate rebuilding of the garage.

The station is less than a quarter of a mile from the geographic South Pole.

## Navy Men on Antarctic Duty Find Work Keeps Up Morale

WASHINGTON (Science Service)—Work keeps up the morale of the Navy and civilian personnel confined for six to 12 months with the same group of men on the South Pole.

Ability to control emotions, as well as consideration and friendliness for his fellow workmen, are also important. Lieut. Paul D. Nelson of the Navy Medical Neuropsychiatric Research Unit, San Diego, reported here to the meeting of the Association of Military Surgeons of the United States.

McMurdo Base, the largest of the research stations on the Antarctic Continent, is composed of about 200 men. Smaller outlying stations include Byrd, Hallett and Eights in addition to South Pole. They vary in membership size from 12 to 35 men.

## *IT'S WARMER IN ANTARCTICA*

DALLAS, Dec. 2 (UPI). —Ham radio operator Jim Tolbert last night broadcast a description of the cold wave which dropped temperatures to 16 in this southwestern city.

"Why, that's even colder than down here," replied another broadcaster. "It was 22 degrees here today and the men were going out coatless."

Tolbert was talking to Tom Grey of Chicago, a Navy radio operator at Wilyliams Field in Antarctica.

# Seal-Watchers to Build Observatory Under Ice

Nov. 2

McMURDO SOUND, Antarctica (AP)—Marine biologists will install a sub-ice observatory in the freezing waters of McMurdo Sound this summer to watch the behavior of seals.

The observatory, the first of its kind in Antarctica, is a steel pressure vessel 5 feet in diameter and 5½ feet high.

Fitted with six windows, it will be lowered through the bay ice 14 feet into the water. Access will be gained by a 2 foot-diameter 'tube.'

Two scientists at a time, from the four different university groups which are to investigate the Weddell seal at McMurdo, will be able to sit comfortably within the observatory, although the water here is 29 degrees.

Those who will use the observatory include Dr. Carleton Ray, of the New York Zoological Society, Dr. William Schevill, of Woods Hole (Mass.) Oceanographic Station, and Gerald Kooyman of the University of Arizona.

The observatory is now at the Mobile Construction Battalion (Seabees) Headquarters, Davisville, R.I., and is to be airlifted to McMurdo next week.

The biologists' interest in the Weddell seal is focused on the ability of the big, slug-like mammal to dive to depths of 1,400 feet and navigate unerringly back to a single breathing hole on the surface. As heard on underwater phones, inter-seal communications resemble a series of rising and falling "whistler" noises.

Philip M. Smith, Washington, D.C., of the United States Antarctic research program, said: "The sub-ice observatory will give the biologists a unique view of marine life in the otherwise hidden waters of McMurdo Sound. "Lighting will be fitted for underwater photography while there is also provision for handing bait near the observatory to attracted fish to the windows."

The habits of Adelie penguins will be tested in another experiment starting next month. The small comical birds nest by the thousands in rookeries scattered along the coast.

Eighty of them are to be tracked as part of a project to discover if the birds have, as suspected, the ability to "home" on their rookeries when transported hundreds of miles to the interior of the ice continent.

Zoologists Richard Penney, of John Hopkins University, Baltimore, and John Enlem, University of Wisconsin, plan to investigate two equal groups of Adelies taken from vastly different longtitudes.

Forty Adelies will be taken from the Cape Crozier rookery on the edge of Ross Island, 80 miles from McMurdo (170 deg. East). The other lot will be supplied by the Soviet expedition at Mirny (93 deg. East).

The specially marked penguins are then to be taken some hundreds of miles south on the ice where Penney and Enlem will begin a painstaking tracking operation.

"The information gathered so far in these penguin-tracking projects suggests that the Adelies have a kind of natural 'sun clock,' " said Smith.

"This 'sun orientation' they possess seems to put them on a north by northeast course, while there is also evidence that when the sun is obscured they tend to wander in circles in locales unknown to them.

"Will the 'Russian' birds home on Mirny, irrespective of where they are dropped and will be 'Americans' home on Cape Crozier, just as surely?

"There will also be the chance to study whether they have the sense to turn south to get home—or do they just head naturally northwards under any strange conditions."

Scientists became aware of the long-distance homing ability of the Adelies when a few birds which were airlifted 1,200 miles from Wilkes Station to McMurdo reappeared at the rookery after a marathon swim around the coast.

### U.S. to Build Dispensary

CHRISTCHURCH, New Zealand, Sept. 22 (Reuters)—A dispensary will be built at the United States Antarctic base at McMurdo Sound to reduce the necessity for emergency flights to seek medical care elsewhere, the Navy announced here Tuesday.

# Fly Hurt Photog From Antarctic

Christchurch, New Zealand, Dec. 2 (Reuters)—An injured Life magazine photographer, Michael Rougier of Miami, Fla., today was flown from the Antarctic by the U. S. Navy. He was with the Texas Technological College at Shackleton Glacier when he fell and broke two ribs. He had been in the Antarctic for about five weeks.

### Crash in Antarctica

McMurdo Station, Antarctica, Dec. 5 (AP)—A U.S. Navy helicopter crashed on the ice and burned today, but the three men aboard escaped unhurt and were picked up by the chopper's mother ship, the icebreaker Staten Island.

# *Nebraskan Is to 'Summer' at Pole*

Nov. 29

A rough-and-ready University of Nebraska professor will be thawing water and eating dehydrated food in a tent near the South Pole this holiday season.

Dr. Samuel Treves, chairman of the Department of Geology, is leaving this week end for his seventh polar expedition. He expect to be back in time for second semester classes.

Dr. Treves is leaving now to take advantage of the Antarctic Continent's 24-hour daylight and "warm" zero temperatures.

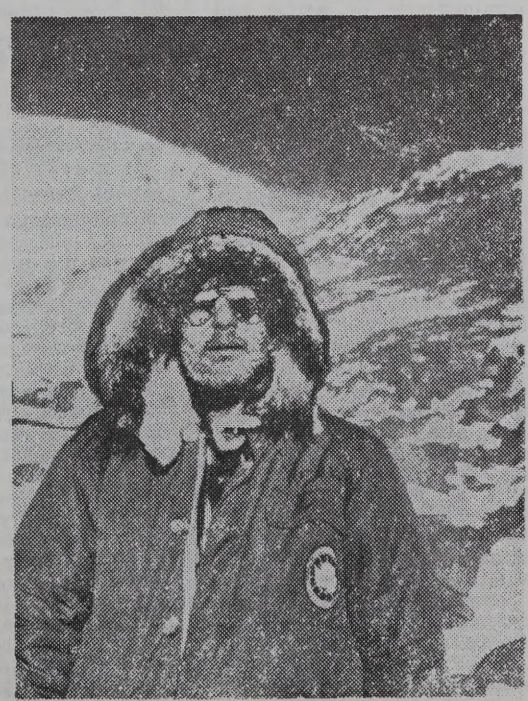
His project is to make a giologic map of Mount Erebus on Ross Island. Erebus is the only active volcano on the continent.

The project is financed with a grant from the National Science Foundation.

Food and supplies will be flown to his tent camp by the United States Navy.

Dr. Treves will take another scholar along, Larry Kovach, a graduate geology student of Ohio State University.

They will make the first reliable geologic map of the area. Scientific interest comes from the fact that the rocks of Mount Erebus are different from those of other volcanoes of the world.



Treves . . . "Warm" weather there.

### Australian Sees Antarctica As Attractive Tourist Area

HOBART, Tasmania (AP)—The Antarctic's potential as a tourist area has been ove looked, according to Dr. Phillip Law, director of the Foreign Ministry's Antarctic Divisions.

Dr. Law said in a lecture recently that establishment of trans-Antarctic air routes, possibly within the next 10 years, could lead to development of tourist activities on the icy continent.

McMurdo Sound, the main United States base in the Antarctic, offers many attractions and would be a suitable site for a tourist resort, he believes. He said it would also be a good stopping point on an air route between Australia and South America.

Why go to Hawaii, Dr. Law asked, when it would be only 600 miles farther to fly to New York by way of McMurdo, Buenos Aires and Rio de Janeiro?

# SCIENTISTS STUDY SEALS' 'LANGUAGE'

## Antarctic Project Hopes to Decipher 'Voices'

McMURDO STATION, Antarctica, Dec. 12 (Reuters) — A group of American scientists are taking turns sitting alone in a tiny, bucket-shaped capsule under the Antarctic ice to determine how and why seals talk.

The biologists hope to decipher the meaning of the seals' language—a series of whistles; buzzes, beeps and chirps.

One scientist who climbed into the capsule here, William Schevill, said later: "I have never heard such an underwater racket before."

Dr. Schevill has made a long study of whale and seal sounds. He has been lent to the United States artarctic research program sponsored by the Government's National Science Foundation in Washington.

Each scientist takes turns sitting in the 6-foot high, 4-foot wide steel capsule. It is equipped with a hydrophone recording system with a range up to five miles and floodlights giving a view up to 200 feet.

The chamber, hanging seven feet below the ice in a 1,000-foot deep area of McMurdo Sound, has six windows.

Dr. Carleton Ray of the New York Zoological Society said: "A soft bluish light filters through the ice, whose wavy underside resembles a cloudy sky."

"The dim surface illumination rapidly fades off into complete blackness below," he added. "Gracefully swimming seals were around most of the time, often going to breathe in a hole we had chopped in the ice, and sometimes coming to inspect the chamber."

Among the few fish seen was a strikingly colored jellyfish with an umbrella four feet across and tentacles 30 feet long.

Many of the seals were heard but not seen because they were too far away or too deep for light penetration.

But the hydrophone arrangement made it possible to calculate the depth at which each sound was made in this area of extremely low levels of noise from other sources.

The scientists explained that this is important because seals hunt for fish at considerable depths in total darkness and are likely to use any sonar possibilities they possess.

The Weddell seal was chosen, the scientists said, because it "surpasses all other seals that have been studied in the variety, amount and power of the sound it produces. . ."

Dr. Schevell said that "we will carefully analyze this jumble of sounds, together with our filed observations, in the laboratory for clues to the 'language.'

"The sound tracks must be analyzed with instruments for full understanding, because seal voices have many characteristics that humans cannot hear.

"This process will take several months, and the conclusions must be proven by experiments with captive seals."

# *Antarctic Observations To Be Resumed by Japan*

Asahi Evening News
TOKYO, Nov. 17

A 40-man scientific observation team will be sent to the Antarctic next Winter, according to an announcement on Monday by a spokesman for the Antarctic observation Headquarters.

The observation team will leave Japan in November of 1965 and will carry out observations in the Antarctic. The wintering team will consist of 18 men.

In 1968 the plan calls for trips into the unexplored interior of the Antarctic.

Money requested for the plan in fiscal 1965 amounts to ¥2,414 million.

Construction of a 6,000-ton icebreaker able to crack ice six meters thick is now under way. About ¥1,000 million is being requested as extra construction funds.

Another ¥1,000 million is being sought for the purchase of a third large helicopter. Orders have already been placed for two large helicopters.

The ¥215,000,000 being asked for purchase of observation equipment includes funds for a multicolor photo-electric light meter to catch the various colors of the aurora Australis, an ultral low frequency receiver to measure terrestrial magnetism and underwater cameras for photographing marine life.

Plans are expected to be finally approved about the middle of December when the draft budget for fiscal 1965 will be completed.

The Antarctic Observation Headquarters hopes to select members for the 1965 team in April of 1965 and to begin their training the following month.

The team will consist of 20 technicians and scientists, and 20 camp construction workers.

The 18-man wintering team will be the largest so far.

Japan carried out Antarctic observations between 1956 and 1962 when work was finally suspended because the observation ship Soya had become too old and also because of a lack of trained helicopter pilots.

# Soviet Moving Its Antarctic Center

The New York Times

MOSCOW, Dec. 30—The Soviet Union said today that it had begun moving the headquarters of its Antarctic operations from its eight-year-old base of Mirny to the new research station of Molodezhnaya, 1,300 miles to the west.

Yuri A. Khabarov, Soviet administrator of Arctic and Antarctic research, said that prefabricated housing and equipment for the new headquarters, in Enderby Land, was on its way from the Soviet Union aboard the OB, one of the supply vessels used by the Soviet Union for its Antarctic-research program.

Mr. Khabarov, whose office is under the Hydro-Meteorological Service, the Soviet Union's weather bureau, did not say when the move to the new station, first announced last summer, would be completed. It is believed that it may take two Antarctic summer seasons.

In an interview with the newspaper Trud, the polar-research official said buildings at the Molodezhnaya base would be erected on piles to keep them from being buried by snow drifts. They will be painted in bright colors to enliven the grayness and monotony of the Antarctic environment.

The Molodezhnaya station was opened in February, 1962, originally as a seasonal outpost to supplement the Soviet Union's permanent bases at Mirny and Novolazarevskaya, on the coast and Vostok Inland.

It soon became evident that the new station had several site advantages over other coastal points. It has rocky outcrops covering three square miles and offering good foundations for the construction of a settlement.

Lake-filled depressions among the rocky hills provide ample fresh-water supplies. Off-shore approaches are sufficiently deep to allow ocean-going supply ships to come close to land.

The Soviet Antarctic headquarters has been at Mirny since that station was founded in February, 1956. Operations there have been made difficult by drifting snow. Mirny will continue to function as a regular research station.

The New York Times Dec. 31, 1964

Soviet bases Mirny (1) and Molodezhnaya (2) are shown.

## Australia to Rebuild Station in Antarctic and Close One

CANBERRA, Australia—The Government is to rebuild one of its Antarctic stations and close down another, the Australian News and Information Bureau reports.

The Minister for External Affairs, Paul Hasluck, said recently in Canberra that Wilkes Station was deteriorating and this was impairing the efficiency of operations.

He said a new station would be built on a good rocky site about a mile away. Work would begin when the present party at Wilkes was relieved in January, he added.

Mr. Hasluck said the new Wilkes station would take up to four years to complete. The Davis Station on the coast of Princess Elizabeth Land is to be closed next February to help pay for the rebuilding of the Wilkes Station.

### Phototelegraph to Antarctica

MOSCOW (Reuters) — Pictures of the three latest Soviet atsronomers and their welcome here were sent by phototelegraph from Moscow to Antarctica, more than 9,000 miles away, Tass, the official news agency, reported recently. The experimental transmission was a complete success and Soviet radio engineers in the Antarctic described the pictures as "extremely clear," the agency said.

### Australians Antarctic-Bound

MELBOURNE, Australia — The Polar vessels Nella Dan and Thala Dan are soon to leave Melbourne with relief groups for Australia's Antarctic Research expedition. The new groups will explore more of the Antarctic coast and help replace the Australian station at Wilkes. The Wilkes station is being replaced

# ANTARCTIC TEAM STUDYING FOSSILS

## Rocks From Scott Camp Said to Be 600 Million Years Old

SCOTT BASE, Antarctica (Reuters) — Four New Zealand explorers are trying to solve a 50 - year - old geological puzzle during a two and a half month expedition to Antarctica.

Using motorized sledges, the four men hope to cover 2,000 square miles. They will try to establish whether life existed in the Antarctic 600 million years ago.

The puzzle goes back to fossils found at the Antarctic camp of Capt. Robert Scott, the British explorer who perished on an expedition to the South Pole in 1912. The most curious find of Scott's party was a group of rock specimens containing coral-like fossils.

The fossils were discovered in the tent where Scott's party died.

Notes accompanying the samples explained that the rocks were collected while sledging up the Beardmore Glacier. Radio-carbon dating has estimated that the fossils are about 600 million years old, the oldest ever found in the Antarctic.

Geologists say such specimens, previously found only in Australia and the Soviet Union, cannot be fitted into the geology of the Antarctic.

During the 1960-61 summer season of the International Geophysical Year, a geologist with the New Zeland Antarctic party, Malcolm Laird, found similar fossils in a limestone formation.

But he was unable to gather complete information on the rock formation, so, as part of the New Zealand research program for the Antarctic for this southern summer, he is leading a four-man party into the area.

The party, their supplies and equipment, were flown by United States Naval Aircraft to a site near the Nimrod Glacier, 400 miles south of Scott Base.

The group's main task will be to plot a geological map of the whole area. This will be made easier for the party by a curiosity of nature — the exposed face of a 5,000-foot bluff, at the southern end f the Holyoake Range, which has been eroded by the Nimrod Glacier.

Meanwhile, as part of a major soil survey across the southern hemisphere, New Zeland soil scientists are working on the Antarctic end of the project.

They are seeking information about the early stages of soil development to reach a greater, understanding of New Zealand soil formations.

New Zealand's investigations in the Antarctic have so far shown a similarity between the soils of desert regions and the arid soils of Antarctica.

Vegetation found in hot deserts, such as moss and lichen, has been found. Samples will be taken back to New Zealand and analyzed.

# Australia Cuts Back On Whale Fishing

**By Albert E. Norman**

*Australia-New Zealand Correspondent of The Christian Science Monitor*

**Sydney**

The world is confronted with a crisis in its Antarctic whale fisheries. In line with this emergency, the Australian government has prohibited all humpback whaling from Australian shore-based whaling stations.

This action follows a recommendation by the International Whaling Commission, of which Australia is a member, to protect world humpback and other whale stocks.

The decline in humpback numbers plus the new Australian official ban has put the Australian whaling industry in a tight spot.

Two whaling companies have gone into liquidation and another has abandoned sea farming for wheat farming.

Another has gone into the shrimp industry. At the same time, it has kept its whaling organization intact in the hope that the total ban on humpbacks may be eased later on.

This company also is trying to secure federal approval to locate a new shore station on Australia's west coast near sperm whale waters. There is no ban on hunting this species.

While seagoing Antarctic whaling fleets have been maintained at fairly constant strength (17 expeditions) the total catch has been falling. Since the fleets are efficient in the main this trend indicated a decline in whale numbers.

The International Whaling Commission (IWC) accordingly appointed a three-man committee of scientists. This group, in conjunction with the IWC's own scientific committee, examined the current evidence, as well as whale fishing statistics for the past 30 years.

It was found that Antarctic humpback, blue, and fin-whale stocks were seriously reduced. Antarctic whale expeditions took 15,253 "blue whale units" (the international unit standard) in 1961-62. In the following season they took 11,300 units.

The falling whale population graph, said the scientists, indicated that the current season would yield about 9,000 bw units. (One blue whale equals, in the international code, two fin-whales, 2½ humpbacks, or six sei whales.)

The fin-whale catch, it was said, would also need to be drastically reduced if this species was to retain its economic potential.

The future fin-whale catch would have to be held to 5,000 units a year, according to IWC scientists' findings. In fact, these experts would prefer this figure to be lowered even more to uroduce the best long-range fishing potential.

The blue whale also is now under complete protection in the southern hemisphere following the IWC recommendation to the 16-member countries. In agreeing to this ban, all members recognized however that the pygmy blue whale, a smaller species, still could be taken.

There was considerable disagreement among member governments on the need to reduce the total world catch, set at 15,000 bw units. But this was later reduced to 10,000 bw units.

Since the humpback and blue whale species are now excluded from the legal world catch, this new quota throws stress on the fin-whale species. And as mentioned, IWC scientists would prefer some of the load removed from fin-whale stocks.

B. R. Sen, Director-General of the Food and Agriculture Organization, wrote the IWC on its conservation recommendations. Mr. Sen warmly approved the ban on humpback and blue whale stocks. But he considered the new load thrown on the fin-whale made the new total quota reduction "completely ineffective as a conservation measure" for this type.

When the United States purchased Alaska in 1867, the seal herd was estimated at million animals. Uncontrolled slaughter of the seals cut the herd to 100,000 until conservative measures were taken.

# WHALING DISPUTE IMPERILS SPECIES

## 4 Countries Reject Proposal on Quotas for Antarctic

**By JOHN HILLABY**

The New York Times

LONDON, July 30 — The four nations that send whaling fleets to the Antarctic — the Netherlands, Norway, the Soviet Union and Japan — have rejected the scientific advice of the International Whaling Commission about limitations on the size of next season's catch.

The result, in the opinion of informed observers here, is likely to be that yet another species of whale, the finback, will be hunted out of existence. The blue whale, the biggest species of all, is already threatened with extinction.

Negotiations between scientists and whaling interests broke down at a meeting of the International Whaling Commission at Sandefjord, Norway, last month when representatives of 14 nations and various protective and research organizations heard about prospects for the 1964-65 season.

An official statement, issued after the meeting and made public here today, said, "The position of the blue whale stock in the Antarctic was considered to be so serious that extinction was thought possible."

All the delegates agreed to almost total protection of the species.

The organization recommended a total 1964-65 catch of 4,000 "whale units"—equaling 4,000 blue whales or 8,000 finbacks.

The Antarctic whaling countries, rejecting this limit, proposed two amendments — one for 6,000 and another for 8,500 whale units, but they "were not acceptable," and the commission "failed to set a limit for the Antarctic season 1964-65," the report said.

The problem has been referred to the International Union for the Conservation of Nature and Natural Resources, based in Switzerland, and there are hopes that it will be raised in the United Nations General Assembly by the Food and Agriculture Organization.

On the other hand, some zoologists, including Dr. L. Harrison Matthews, scientific director of the Zoological Society of London, have suggested that a wholesale assault on remaining whale stocks may have the long-term effect of preserving certain species. They think it will soon be unprofitable for the large deep-water fleets — usually composed of about 18 vessels, including a large factory ship — to put to sea.

# World's Biggest, But for How Long?

By CARLETON RAY

WITH profound sadness the biologist or humanitarian contemplates the blue whale, the world's biggest living creature. The species is becoming extinct.

Civilization draws away from nature as it destroys it and this sadness does not reach us all. Our culture mourns the fading of a great painting, yet art is but imitation. The blue whale can never have an imitation. It represents the culmination of many facets of the most complex and beautiful thing of which we know, life itself. It is a creature to which only superlatives are applicable, a living, vibrant, highly intelligent fellow mammal.

In not quite a century, humans in magnificent myopia have all but eliminated the blue whale as they have hunted it down for oil, meat and fertilizer worth millions of dollars. There are probably fewer than 10,000 blue whales left, including the slightly smaller "pygmy blue." And if the slaughter continues, an adviser to the International Whaling Commission warned recently, the blue whale will soon be gone.

## LIVING IN DANGER

WHALES are re-entrants into the sea, mammals perfectly adapted to the greater part of this planet where man is unfortunately robbed of his senses and, therefore, the greater part of his ability to cope with his surroundings. Even whales are at some disadvantage at sea, for in adapting to a medium foreign to a mammal, they have become increasingly specialized and have lost the use of limbs and the sense of smell. Specialization is dangerous in evolution, however beautiful in its perfection.

Size precludes minute study and experimentation with the blue whale. Our technology at present does not allow close observation of large marine creatures. Therefore, a portrait of this vanishing beast deals largely from anatomy and dissection, a few observations on the sea's surface, inference from smaller Cetacea, and guesswork.

The species was given its scientific name, *Balaenoptera musculus*, by the great Swedish classifier of living things, Carl von Linné, called Linnaeus, in the 18th century. But how long men have known the blue whale is anyone's guess, though it certainly must have been known by ancient tribes and civilizations bordering the North Atlantic and Pacific Oceans. Perhaps it was even known to tropical shore people, since the species spends its winters in warm waters. It is a creature hard to miss, for size is its most notable characteristic.

## RECORD-SETTER

THE blue whale is the largest and heaviest creature that has ever lived. It reaches a bit over 100 feet in length and close to 150 tons in weight. It would take 30 large elephants or three of the largest dinosaurs to equal its bulk. The heart alone weighs a thousand pounds, the liver over a ton, the brain, not actually proportionately large, about 20 pounds. Females are a bit longer than males. The color is slaty blue, somewhat lighter on the sides and belly and slightly mottled.

The blue whale yields an average of 40,000 pounds of oil. Other species are richer pound for pound. The shape is slim and streamlined, enabling the whale to attain speeds estimated at 16 to 18 knots for short bursts.

## TOOTHLESS

CLUES to an animal's way of life are to be found in the observation of its most vital activities—feeding and breeding. During the warm months of October through late March, the blue whales of the southern hemisphere are southbound or in Antarctic waters. (There is also a sparse northern hemisphere population, but for it the seasons are reversed.) There, they feed hugely and almost exclusively on "krill," a pelagic, shrimp-like crustacean two to three inches long fully extended.

The blue whale is a "baleen" whale, that is, it has no teeth, but has whalebone hanging from the upper gums, forming a meshwork for straining krill from the sea. When the blue whale locates a concentration of krill, the mouth is opened widely, the tongue depressed and the throat greatly expanded. Water and krill are engulfed together, the mouth is closed, the throat contracted, and the tongue brought up and forward. This action forces the water out, but the whalebone mesh retains the krill, which is swallowed through an esophagus that could hardly accommodate a moderate-sized fish. It is estimated that a medium-sized blue whale eats four tons of krill a day in eight meals of a half ton each.

There is a practical reason for the high consumption of krill, which is rich in protein and oils. Marine mammals have among the highest of metabolic rates, more pound for pound in terms of oxygen consumption or food intake than land mammals. This is a consequence of life in the coldest of environments, that of polar seas. Even warm waters are much colder, metabolically speaking, than air of the same temperature since air is a good insulator and water is a conductor of heat.

Therefore, the marine mammals consume large quantities of high-energy foods, especially fats. These are stored in the blubber as insulation and yield

**THREATENED WITH EXTINCTION**—A lifesize model of a blue whale, "a creature to which only superlatives are applicable," on display at Washington's Smithsonian Institution.

**CARLETON RAY** is associate curator of the New York Aquarium of the New York Zoological Society.

the greatest energy of any foods when metabolized. They also yield large quantities of water as they are "burned," a definite advantage to any animal that lives in one of the metabolically "driest" environments—the salty sea.

### LITTLE BLUBBER

BY April, this gigantic feast is about over. The herds head north to temperate and tropical waters. They go as courting pairs, as females about to calve and as those unmated or immature. Copulation takes place in the southern hemisphere midwinter, June through August, at the surface. Those mated the previous year give birth to calves in April and May after 10 or 11 months of gestation. Not until the return to the Antarctic in October does feeding occur, or so it is said. There is at least a two-year interval between births for any individual female.

The calves are about 24 feet long and are slimly built, with virtually no blubber. They weigh about 2½ tons, representing a weight gain of about 16 pounds a day as embryos. This, however, is nothing to the weight gain during nursing. At seven months of age, weaning takes place and the calf is 52 feet long and weighs 22 to 23 tons, having gained 20 tons or almost 200 pounds a day. Of course, the greater part of this gain must be in the latter months of nursing.

Even more stupendous must be the weight loss of the female. Seals lose about two pounds for every pound of infant gain and seal pups have even greater weight increments. If this is also so for the blue whale female, weight loss must be in the vicinity of 40 tons, a third of the total weight, before reclaiming this weight in polar waters.

Larger calves are estimated to consume 130 gallons—1,000 pounds—of milk a day during a number of short nursing periods, in which milk is pumped into them by contractions of the mother's breast. A weight gain of 200 pounds a day on 1,000 pounds of food is efficient indeed. Less than half of the milk is water. Most domesticated animals and humans have milk that is 80 to 90 per cent water. Cetacean milk is 40 to 50 per cent fats, 11 to 12 per cent protein and only 1 to 2 per cent lactose or milk sugar. It is a milk to build bodies quickly. The size increment is necessary, as is the laying down of a thick layer of blubber, for both afford protection against the rigors of Antarctic cold which the calf has to face during seven months of nursing.

It would not be hard to show that the female produces as much as her total weight in milk, but how is a guess. This would be impossible if she did not commence feeding sometime during the nursing period, which casts some doubt on the current theory that the female does not feed until October.

During lactation and nursing, the mother is very solicitous of her calf. The two are rarely apart and a boatman might find himself in some danger while trifling with a calf blue whale. But at weaning, the union begins to break. The calves grow independent and by the age of 4 to 5 are sexually mature and 75 feet long. Physical maturity comes at 12 to 13 years, at which time females average 87 and males 81 feet. They live about 30 to 40 years.

### ZEROING IN

THE hunt for the blue whale did not begin until the eighteen-sixties, when the Norwegian, Svend Foyn, developed the harpoon gun, explosive head and catcher ship. This combination was needed before these speedy and elusive whales could be caught. In 1925, with the advent of stern slipways on factory ships, open-ocean whaling began in earnest. In the last 100 years, more than a third of a million blue whales have been captured and today the entire whaling industry, in spite of motions in the direction of conservation through the International Whaling Commission, is about defunct, a victim of the same old story—overuse of resources.

The land is rapidly losing its productivity and we turn to the sea even as we must realize that the sea, with our laissez-faire attitude toward it, is depleted, too. The whales, with all their potential as a great resource, are still barely salvageable proof of that.

THE NEW YORK TIMES MAGAZINE

### Japan Builds Expedition Ship

The Nippon Kokan Company, a leading Japanese shipbuilder, has received a contract to build a vessel for Japan's seventh Antarctic expedition, scheduled for October, 1965. The contract calls for a hull specially strengthened for the ice fields.

# EXPERT PREDICTS END OF WHALING

## Failure to Limit Catches Is Called Portent of Doom

By JOHN HILLABY
The New York Times

SOUTHAMPTON, England, Aug. 27 — The world whaling industry is on the verge of collapse, according to one of the four scientific advisers to the now almost defunct International Whaling Commission.

Unless Norway, Japan and the Soviet Union can be persuaded to limit their catches in the Antarctic this year, he predicts that whaling will soon cease to be economically possible. He says also that in such an event an industry potentially worth $140 million a year will have been wrecked by overexploitation.

This opinion was expressed at today's session of the British Association for the Advancement of Science by John Gulland of the British Government's Fisheries Research Laboratory at Lewistock.

He related how the International Whaling Commission failed to reach agreement on catch limitations at their meeting in Sandefjord, Norway, two months ago. The result, he said, is that whaling next season "is likely to continue vritually unrestricted."

The blue whale, the biggest animal in the world, is believed to be close to extinction. Stocks of its near relative, the finwhale, were said to have slumped from annual catches of 28,000 to less than half as large despite the vastly increased efficiency of the whalers.

"Conservation of whales has failed — and failed for many reasons," Mr. Gullard said.

The principle one, in his opinion, was that "like other wild life resources, the whale belongs to no one and therefore it is in no one's direct interest to look after them."

He thought that at this stage of the whale's declining only the intervention of a united agency could save them.

Mr. Gulland added in an interview that in the last month Japan had bought out the sole remaining whlaing fleet of the Netherlands with the object of adding that country's 6 per cent quota of the world's catch to her own.

The world's deep-sea whaling fleets are now divided between Norway and the Soviet Union (four each) and Japan (seven). Each fleet is composed of about 18 vessels, including factory ships.

Asked if there was any positive evidence that the annual maximum quotas set in the past by the International Whaling Commission had been exceeded, Mr. Gulland said he had "a very strong suspicion" that whales had been caught out of the agreed season and also outside the agreed catching areas.

In his opinion, the breakdown of the Whaling Commission might tempt nations to disregards fisheries agreements such as those existing in the Pacific and the Atlantic.

The whaling situation is to be discussed at a council meeting of the United Nations Food and Agriculture Organization in October when member countries will be asked to submit proposals for a new whaling control board.

The four scientists whose recommendations have been disregarded by the commission are Mr. Gulland, Sidney J. Holt of the Food and Agriculture Organization, K. R. Allen of New Zealand and D. G. Chapman of Seattle.

# *QUOTA FOR WHALING CALLED NOT BINDING*

OSLO, Norway, Oct. 26 (Reuters)—Norway asserted today no whaling nation was bound by agreements signed earlier this year concerning the catch in the 1964-65 Antarctic whaling season, which opens in December.

A Norwegian Foreign Ministry statement said, however, that Norway and Japan had decided to adhere to the quota of 8,000 blue whale units—of which Japan is permitted to catch 52 per cent, Norway 28 and the Soviet Union 20 per cent.

Although the Soviet delegation to the International Whaling Commission meeting in Norway earlier this year signed the quota recommendations, the Soviet Government has not ratified them.

The Norwegian statement said the Soviet Union would not drop a previous demand for an international conference to discuss the quota system itself, while the Japanese authorities had rejected Norwegian invitations to an Oslo meeting, regardless of the agenda.

The Norwegian Foreign Ministry spokesman announced earlier the cancellation of a conference of the world's whaling nations that had been scheduled to open here this week to discuss an observer system for this Antarctic season.

### Whale-Meat Sausages Made

MOSCOW (AP)—"A surprise will await the visitors to food shops in the near future," said the newspaper Vechernaya Moskva, in announcing the development of smoked sausages made from whale meat. The paper reported that the sausages, developed by the scientific institute of the meat industry, were tasty and unusually nutritious.

# Glaciers

## Still Moving

By WALTER SULLIVAN

The New York Times

Nov. 29

"Glacial speed" is to most people the epitome of slowness, a process measured in feet per year. Recently, however, it has been found that certain glaciers every now and then take it into their heads to sprint, in a glacial sort of way.

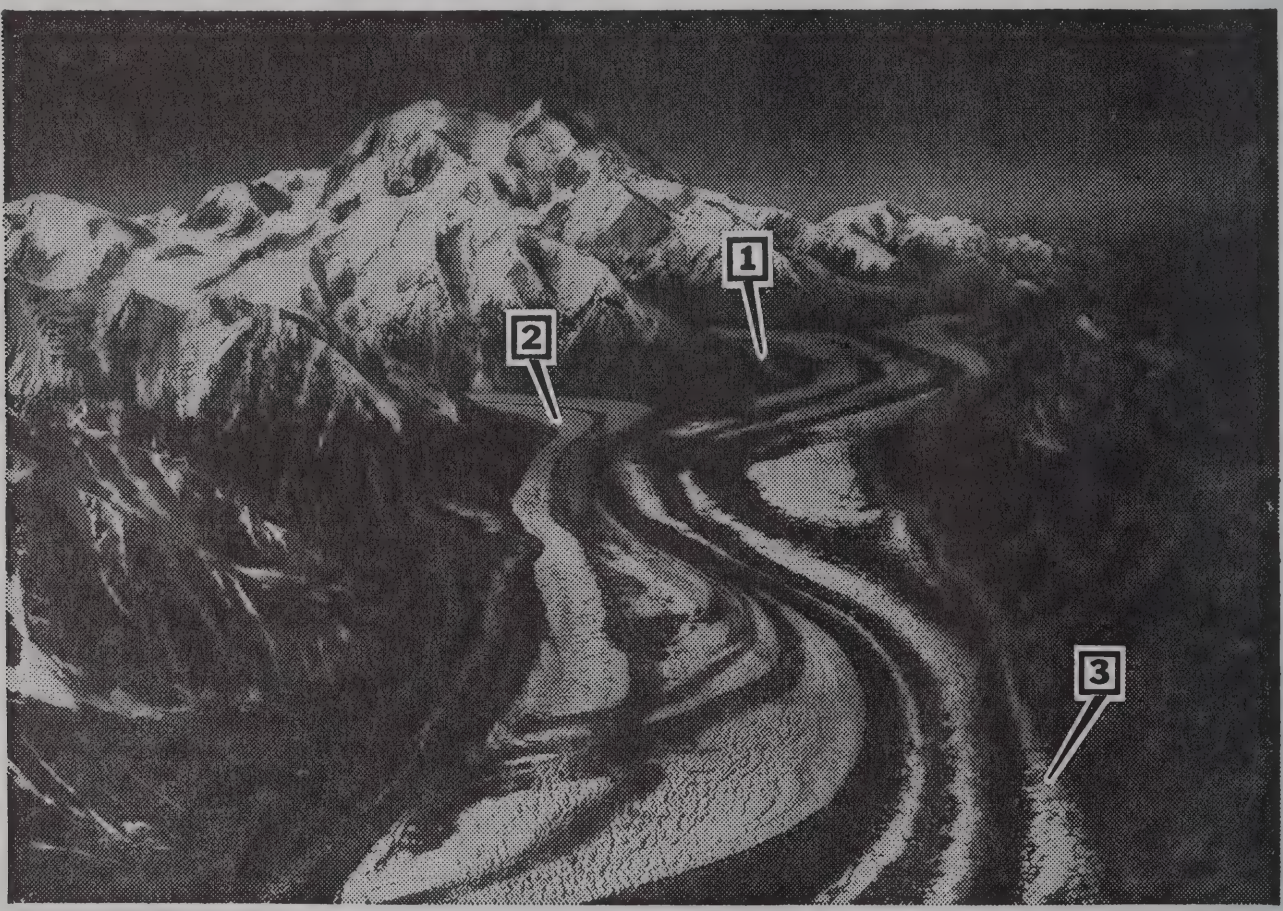
Notable among these is the Muldrow, a magnificent river of ice, fed by the snows of Mount McKinley in Alaska. During the winter of 1956-57 it suddenly discharged billions of cubic feet of ice into the valley below. Now a study of aerial photographs, taken of the glacier over the years, has shown that such "surges" occur periodically.

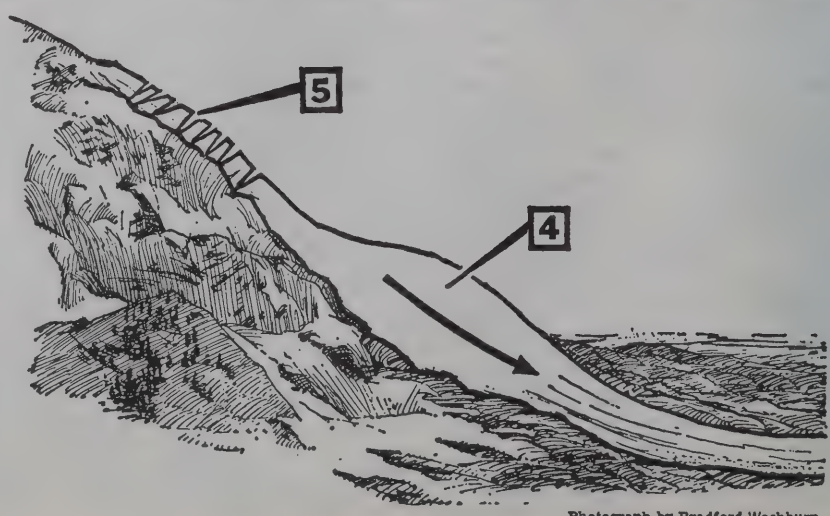
In fact a Soviet glacier specialist reports that there is an even more rambunctious glacier in the Pamir mountains—the Medvezky, which breaks loose every 15 years.

What has made possible a detailed analysis of the most recent Muldrow surge is a collection of aerial photographs and surface surveys of the glacier, made before, during and after the event. Many were produced by the expeditions of Bradford Washburn, who heads the Museum of Science in Boston. Mr. Washburn, an authority on Mount McKinley, highest peak in North America, has made a number of ascents via various routes.

Last week Mr. Washburn described as "fantastic" a recent disclosure that billions of cubic feet of ice vanished from the upper Muldrow in the course of a few months. In a wave-like progression the great, 35-mile valley discharged most of its ice at high speed. The crest of this wave moved down the valley at about 48 feet an hour.

In the current Journal of Glaciology Dr. Arthur E. Harrison points out that snaking moraine patterns, giving a marble-like appearance to the glacier surface, indicate that such surges occur periodically. These moraines are ribbons of rock




ERRATIC GLACIER: Aerial and ground observations have shown that Mount McKinley's Muldrow Glacier, shown in photograph, periodically "flushes" its ice in a catastrophic manner. The snaking moraines, or ribbons of rock debris, on its surface show that at least four such surges have occurred in the past century. The rock is picked up by the flowing ice where it cuts into mountainsides (1). After each surge fresh ice from the Brooks Glacier (2) flows into the main glacier, pushing its moraines to the right side (3). Such a surge is shown, schematically, at the right. It moves down the glacier as a wave of compression (4) at some 48 feet per hour, leaving the glacier behind it depleted of ice and torn by tension, forming crevasses (5).

Photograph by Bradford Washburn

debris picked up by the moving ice as it cuts into mountainsides along its path.

Normally such moraines run parallel to the valley, but in the case of the Muldrow they are periodically pushed to one side. Each of these distortions, Dr. Harrison believes, is the aftermath of a surge.

The surge drains the main valley until only stagnant ice remains. Then fresh ice from the tributary Brooks Glacier (on the left in the photograph on this page) begins pouring into the depleted valley, pushing the dead glacier and its moraines to the far side. This deformation is then carried downstream with the slow flow typical of a glacier.

The Russians have sent Dr. Harrison data indicating similar behavior by runaway glaciers in their territory.

At least four surges have been reported from the glacier-draped Alaskan Range in the past 30 years. The last one on the Muldrow prior to 1956 seems to have occurred between 1906 and 1912, the snaking moraines indicating a total of at least four over the past century.

Dr. Harrison is only a part-time ice specialist. His main job is as professor of electrical engineering at the University of Washington. From aerial photographs he has concluded that the latest surge began in May, 1956, part way up one of the two main tributaries of the Muldrow—the Traleika Glacier.

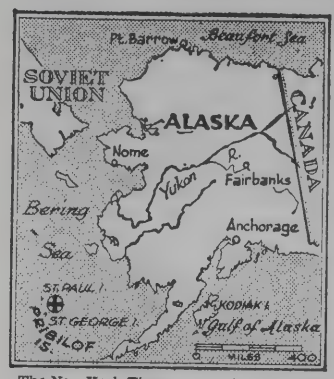
Trying to explain such catastrophic ice movements has become a favorite pastime of glaciologists. Some say the bottom becomes mushy, allowing sudden downhill slippage. Others attribute the events to earthquakes, although no general quakes have been associated with surges.

There is general agreement that the ice volume of the glacier reaches a critical level and that it then "flushes." But why only a few glaciers do this is a mystery.

### Walrus Hunters Rescued

NOME, Alaska, Dec. 2 (UPI) —Two walrus hunters, missing four days were rescued today by an Air Force helicopter. John Burns, 32 years old, an Alaska Fish and Game Department biologist, and Tony Koezuna, 42, the father of eight, were flown here. Rescue officials said they were tired and cold but in good condition otherwise.

## *Seal-Skin Harvest Due to Begin Soon*




The New York Times Aug. 27, 1964
Cross marks sealing area

By LAWRENCE E. DAVIES
The New York Times

ST. PAUL, Alaska.

Several hundred million dollars worth of sleek fur coats, based on retail prices, have been on display this summer on the rocky beaches of this windswept Bering Sea island. Their wearers make noises like the snort of a bull, the moo of a cow, the quavering ba-a-a of a sheep and the yelp of a dog.

It may be several years before any of the 1964 models are sold to opera-going Fifth Avenue shoppers. Most of this year's models still encase their original owners, the largest herd of fur seals in the northern Pacific.

This is a herd that, until an international agreement was reached nearly a half-century ago, was threatened with extinction after the taking of millions of pelts by ocean seal hunters. Now, after fluctuating through the years, the herd stands at a figure estimated at 1.5 million. This is calculated by biologists to be an ideal number from the standpoint of productivity and food supply.

It means that on St. Paul and its neighboring island, St. George, here in the Pribilofs 300 miles north of the Aleutian chain, probably 386,000 seal pups were born in June and July. And by the end of the season 60,000 seals 3 and 4 years old will have been harvested for their fur skins.

The United States, the Soviet Union, Japan and Canada have signed a new six-year agreement, effective in 1965, for continued protection of the northern Pacific fur seal from indiscriminate killing.

This country looks after the annual seal harvest in the Pribilofs, the fur seals' favorite breeding ground. About 80 per cent of all the fur seals in the northern Pacific breed here. The Soviet Union has the responsibility for keeping the herds on the Commander, Robben and Kurile Islands on a sustained-yield basis. Canada and Japan, which, with Americans and Russians, agreed to abstain from taking fur seals at sea, receive 15 per cent each of the seal skins taken commercially by the United States and the Soviet Union.

The Bureau of Commercial Fisheries of the Federal Fish and Wildlife Service, in the Department of the Interior, supervises the Pribilof operation. This year, for the first time, the Aleut villagers living on St. Paul and St. George Islands, 40 miles apart, have conducted the seal harvest virtually without direction from bureau officials.

"Always before we have had a team of overseers and bosses to tell them what to do," said C. Howard Baltzo, director of the bureau's Marine Mammal Resources Program, who has spent five summers on St. Paul directing the work. "This year is a milestone and the Aleuts are tremendously proud of their achievement."

Mr. Baltzo estimates that 1.25 million seals have appeared on the rookeries of St. Paul Island since the first bull seals began checking in by late April to select areas where they would establish harems of 20 to 100 female seals.

The cows in great numbers forage in distant waters for fish and squid for themselves and then return to their rookeries to nurse their pups, by now grown to 10 to 15 pounds each. The mothers weigh 95 to 100 pounds and the powerful, belligerent bull seals sometimes 600 pounds or more. Each female seal searches out her own pup among the tens or hundreds of thousands and refuses, biologists say, to adopt another. If the mother fails to return, the pup dies.

By early August teams of Aleut sealers in the Pribilofs had killed and skinned 48,000 seals, mostly bachelors 3 and 4 years old. To prevent the herd from growing beyond 1.5 million, about 12,000 females are taken during the last two weeks of August. Of 50,000 females surviving the age of 4, the remaining 38,000 are left for breeding purposes.

"We had not realized until recently," Mr. Baltzo said, "that their fur is equal in quality to that of the bachelors."

Only about one-fourth of the 386,000 pups born annually survive the killer whale, the hookworm and other dangers and live until age 4.

In the sealing operation, selected groups within the herd are driven in the early morning to the sealing ground back from the sea. There skilled Aleuts differentiate between the sexes with split-second decisions based on head shape, color of whiskers and shape of teeth. Then a seal is dispatched with one blow of a club on the skull. It is stripped of its coat in a few seconds.

This year, for the first time, fur seal carcasses are being ground, quick-frozen and shipped to Oregon under a five-year contract to be fed to mink, a rival of the seal in the fashion marts.

The Pribilof sealskins from both the 1963 and 1964 seasons are in cold storage. The Interior Department has canceled a long-time contract with a fur company and is negotiating with others about the future. If the herd's value were based on the price tag of a fur coat, which requires up to eight seal skins and costs as much as $3,000, the total, if it could be sold at retail, would take care of the national budget for three or four years.

As a matter of practical economics, Mr. Baltzo reported, "we gross about $5 million a year and have gone as high as $7 million."

"This figures out," he said, "to a profit of about $1 million a year, after 15 per cent of the skins have been allocated each to Japan and Canada. Seventy per cent of the profit goes to Alaska under the Statehood Act and 30 per cent to the United States Treasury."

## *Soapstone Carving Gaining Popularity At Alaska University*

COLLEGE, Alaska—Alaskan soapstone from Palmer, sculptured by University of Alaska art students is starting a new art interest in the state, the Tundra Times of Fairbanks reports.

The age-old custom of the Eskimo, particularly the Canadian Eskimo, is being revived as students studying under Prof. Helmut Van Flein discover the beauty and carving characteristics of soapstone.

Resembling gray marble, it varies in hardness and texture. Some pieces are so soft they can be carved with a knife, though for most pieces marble chisels must be used.

The variations between pieces makes it necessary for the student to identify each stone's characteristics.

Four of the first pieces of finished art were recently presented to Gov. William A. Egan and the Alaska Congressional delegation — Senators Ernest Gruening and E. L. Bartlett and Representative Ralph Rivers.

A fifth piece is being presented to the Carnegie Corporation which in 1960 established a grant to bring outstanding visiting professors in the humanities and social sciences to the campus.

The work of two students, Mrs. Edna Wilder and Mrs. Angeline Brown, was selected for the honor.

# LAB IS INSTALLED ON QUIET VOLCANO

## Aim Is Study of How Man Adapts to High Altitudes

By WALTER SULLIVAN
The New York Times
July 25

An experimental station has been established atop an Alaskan volcano that is dormant but hot enough to warm the building.

The structure has been specially designed for such radiant heat.

The site is on Mount Wrangell in southeastern Alaska, at an elevation of 13,800 feet, some 200 feet lower than the summit. The location was picked because it offers a large level area kept free of snow and ice by the heat.

The observatory is to be used by the Air Force's Arctic Aeromedical Laboratory to study the acclimatization of men to a polar environment at high elevations.

Air Force participants declined to discuss the project, pending an offical announcement. However, the program is widely known among polar specialists, particularly on the campus of the University of Alaska, which is a participant.

Such specialists point out that the fighting between the Indians and Chinese on the borders of Tibet has demonstrated the advantages of acclimatization. The Chinese troops approached the frontier from one of the highest plateaus of the world and thus were well accustomed to the combination of cold and thin air. But the Indian troops marched up from the lowland and suffered for it, tactically as well as physically.

American military men would like to know how the body makes such an adjustment. Can it be accelerated? Could troops be preconditioned before they even reach the high country?

The Arctic Aeromedical Laboratory has for many years been working on problems of survival in a polar environment. The laboratory, at Fort Jonathan M. Wainwright on the edge of Fairbanks, Alaska, has been seeking to learn, for example, what enables some animals to hibernate, their pulse almost at a halt and their body temperature only a few degrees above freezing.

The secret to hibernation has been sought by those in particular who are planning for the long space journeys of the future.

The new station is not the first to be placed on Mount Wrangell. In 1953 Dr. Terris Moore, who later became president of the University of Alaska, made 36 flights to the site in a small plane. Additional material was air-dropped and a Jamesway hut, walled with padded material, was installed.

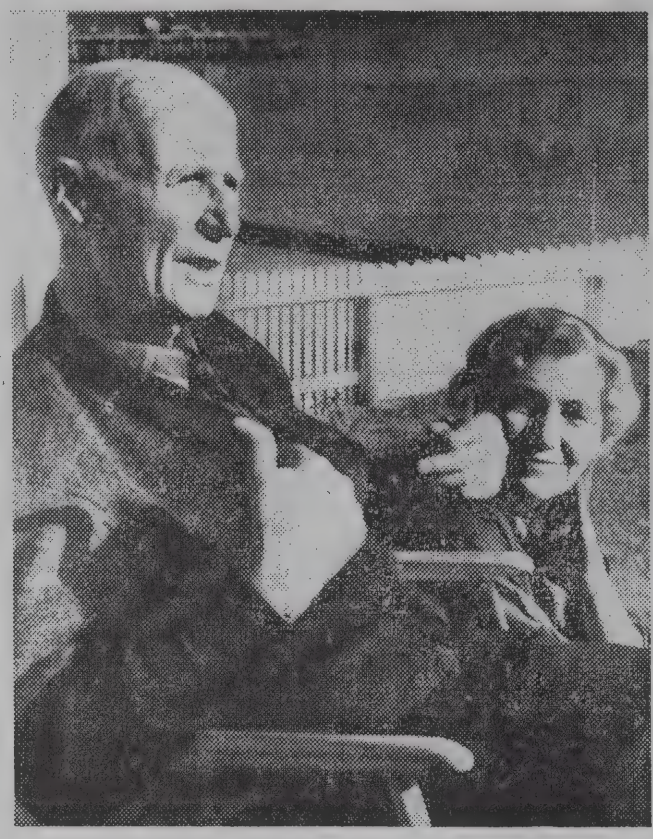
The station was used for two summers by Dr. Serge Korff of New York University for the observation of cosmic rays under a contract with the Office of Naval Research. Such rays — actually atomic nuclei traveling at extremely high velocity — tend to collide with particles of the atmosphere. Hence it is advantageous to observe them from as high a location as possible.

Probably the highest observatory in the world is that 17,100 feet above sea level at Chacaltaya in Bolivia. It is used for cosmic ray observation and other studies.

In contrast to the earlier Jamesway hut, the new installation on Mount Wrangell is to be a year-round station.

The heat in the mountain presumably comes from a reservoir of hot lava stored within it from an eruption long ago. If the mountain follows the pattern of other such volcanoes, any renewal of activity would be introduced by a long period of local earthquake activity.

# MacMillan, Arctic Pioneer, Turns 90



**Rear Adm. Donald B. MacMillan, retired, and Mrs. MacMillan relax outside their home in Provincetown.**

PROVINCETOWN, Mass., Nov. 10 (AP) — Tall and straight as a schooner's mast, Rear Adm. Donald B. MacMillan, last survivor of the Peary North Pole Expedition of 1909, was 90 years old today.

Smiling, crinkles running form his blue eyes, Admiral MacMillan told an interviewer that he had no advice to impart.

"I'm still living and learning every day," he said. "I have to go to the dictionary just like everyone else."

Aided by Miriam, his wife and shipmate on nine northern voyages, Admiral MacMillan spends his time indexing the Arctic accumulation of a lifetime. He has given his Arctic schooner, Bowdoin, to the Marine Museum at Mystic, Conn. Forty miles of old-style nitrate film went to the Library of Congress.

Thousands of books, photographs, Eskimo tools and clothing are to be housed in a special collection at Bowdoin College in Brunswick, Me. Other material will go to a museum in Provincetown.

Admiral MacMillan was chief aide to Adm. Robert E. Peary in the struggle across the frozen Arctic Sea to the North Pole in 1909. Admiral MacMillan and his Eskimo helpers laid a vital supply cache far out on the ice so that Peary, his companion, Matthew Henson, and the Eskimo dog drivers could make the final dash to the pole, the first in history.

Admiral MacMillan later made 25 expeditions to the North, one lasting four years. He compiled the first Eskimo-English dictionary, and lectured and wrote about the Far North for half a century.

# *DUST TO HELP PAY FOR ALASKA HIGHWAY*

WHITEHOUSE, Yukon (Canadian Press) — Little cans of Alaska Highway dust with the label "help convert this dust to pavement" will soon go on sale in Canada and the United States. The canning is to begin here early in August.

The idea is one of those adopted by the steering committee of the Pave-the-Alaska-Highway Committee.

The cans are to sell for $1 each to help defray publication costs of a brochure outlining facts on the highway paving, according to Bruce Mathew, co-chairman of the committee and vice president of the Edmonton Chamber of Commerce.

Mr. Mathew represents the Edmonton and Alberta chambers on the committee, which, at a meeting in Seattle, decided to press the Canadian and United States Governments to reach quick agreement on financing arrangements for paving the highway.

Washington is reported prepared to pay half of the cost of paving the Canadian portion of the 1,523-mile highway, and British Columbia has agreed to contribute one-third of the cost of the section in that province.

Built in wartime, the highway runs from Dawson Creek, B.C., to Fairbanks, Alaska. Only the 271-mile Alaska section and 83 of the 1,252 miles in Canada have been hard-surfaced. The rest is gravel.

# Eskimo to Manage Barrow Airfield

BARROW, Alaska (AP) — Rex Ahvakana, 52-year-old Eskimo who helped bring the bodies of Will Rogers and Wiley Post here after their plane crashed Aug. 15, 1935, has been named manager of the new Barrow airfield.

Akvakana, who knew all about airplanes before he ever saw an automobile, has been a mechanic for Wien Alaska Airlines for many years. He was appointed airport manager by the village council.

# UPLIFT IN ALASKA TRACED IN SURVEY

## 25,000 Square Miles Found Raised by the Earthquake

By LAWRENCE E. DAVIES
The New York Times

ANCHORAGE, Alaska, Aug. 8—Alaska's mighty earthquate of March 27 lifted 25,000 square miles of the earth's surface from three to eight feet, geologists now calculate. Originally, the estimate was 12,000 square miles.

The tentative new figure may ultimately be shown to be at least 25 per cent too low.

Areas of uplift and subsidence, taken together, will almost certainly be in excess of 50,000 square miles.

These findings were given in an interveiw with four of the 20 staff members of the Geological Survey from Washington, Denver and Menlo Park, Calif., who have investigated the far-flung effects of the Good Friday tremor.

They were George Gryc, chief of the Alaska branch of the Geological Survey; Parke D. Snavely Jr., chief of the Pacific Coast branch; Arthur Grantz, a geologist with the survey's Menlo Park office, and Robert Brown, a staff geologist from Washington. Mr. Snavely and. Mr. Gryc are both based in Menlo Park.

Mr. Grantz was the author, with George Plafker and Reuben Kachadoorian, of a preliminary geologic evaluation last spring in which the 12,000-square-mile figure was offered. Recent investigation in Prince William Sound, near the quake's epicenter, showed that the southwest tip of Montague Island, in that body of water, had been lifted 33 feet in a dramatic upheaval.

"We know now where the zero line is—the line at which uplift ceases and subsidence begins," Mr. Gryc said. "It runs along the west side of Prince William Sound and extends down, catching the east side of Kodiak Island. The uplift includes the east side but the rest of Kodiak subsided."

In the original report, which has become a science best seller with 28,000 copies in print, the line separating uplift from subsidence missed Kodiak, but scientists speculated at the time that further study might show it close to the island.

The geologists said the greatest subsidence found so far is about six feet—"just west of the zero line along the southeast side of the Kenai Peninsula."

The Geological Survey has been using the Don Miller, a research barge, and helicopters in its continuing investigation. The area elevated by the quake now is known to extend westward from Yakutat Bay and to include most of Prince William Sound and part of the continental shelf southward to Kodiak and beyond. The earth's surface was affected, either by uplift or subsidence, at least as far as the Shumagin Islands, well out near the western end of the Alaska Peninsula.

Although there has been speculation that the uplifted or subsided lands may right themselves, the scientists said they had observed no geologic evidence that this would happen.

Mr. Gryc paid tribuate to the lowly barnacle as a fast and accurate aid in obtaining measurements of geologic changes resulting from the earthquake.

"All the tide gauges were wiped out," he explained, "and it takes time to install new ones. But our little friends, the barnacles, know where they're suppised to live and they immediately established themselves there. So we measured from the old to the new barnacle line and have found the measurements remarkably accurate. In fact, the barnacle method is so accurate that an earth fault on Montague Island was found by this method."

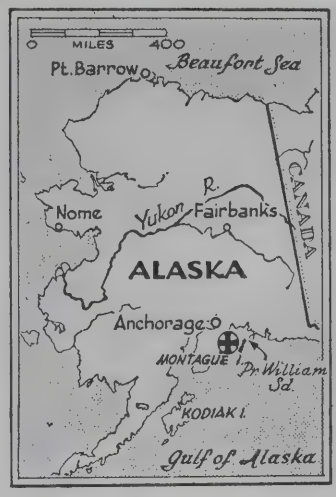
Mr. Grantz remarked:

"George Plafker. who has been doing a lot of this work, is so appreciative that he is carrying a lot of little barnacles around with him."

The geologist voiced surprise that more marine biologists had not appeared to study places like Montague Island. The sea bottom there is exposed, he said, and marine animals have found themselves on land and new animals are getting established.

Mr. Grantz said that initial damage in places like Valdez and Chenega were caused by the tsunami, or tidal wave, but by local waves as high as 100 feet, resulting from submarine slides. So far searches for these slides have not been very successful. The research barge has finished its work for this season and may be used in a follow-up investigation in 1965.

The Coast and Geodetic Survey, which issued a preliminary report on the earthquake in mid-April, has also been continuing its studies with tide gauges and other facilities.




The New York Times July 23, 1964
Cross shows Montague Island

# *An Alaskan Island Was Lifted 33 Feet By Quakes' Force*

WASHINGTON, July 22 (UPI) — An uninhabited Alaskan island was pushed upward more than 30 feet by the March 27 earthquake, the United States Geological Survey reported today.

The agency identified it as Montague Island, in Prince William Sound, about 100 miles south of the epicenter of the quake.

Geologists said the island "shot up" to expose a strip of sea floor up to 1,350 feet in width.

The southern end of the island, they said, was raised as much as 33 feet. The rest of the island rose more than 10 feet.

The Government geologists reported finding "dramatic examples" of damage and changes wrought by the shattering quake on Montague Island.

# *9,200 AFTERSHOCKS RECORDED IN ALASKA*

WASHINGTON, Oct. 18 (AP) — More than 9,200 aftershock earthquakes have occurred in Alaska since the March 27 disaster. Most of them were not felt by Alaskans.

The Coast and Geodetic Survey reported this today in a continuing study of the causes and effects of the big quake, which the service officially rated as "the greatest ever recorded on the North American continent."

Most of the aftershocks took place within a few weeks of the big quake, in a band-shape zone stretching from the Prince William Sound region — about 80 miles from the center of the original disaster — to an area southeast of Kodiak Island, 350 miles away.

Six aftershcks, coming within the first 10 hours, were felt by inhabitants. They registered magnitudes above 6.0 on the Richter scale, the standard employed to evaluate the strength of tremors. The March 27 quake registered 8.5.

Dr. S. T. Algermissen, a survey official, noted that a quake which caused 1,070 deaths, in Skopje, Yugoslavia last year, rated only 5.4 on the scale, and that a 1933 tremblor in Los Angeles, which killed 120 people, registered 6.3.

## Old Wharf in Kodiak, Alaska Uncovered by Earthquake

KODIAK, Alaska (UPI)—A Russian stone wharf believed to date from 1792 was exposed by the earthquake and tidal wave that smashed Kodiak last March 27.

The wharf was disclosed by destruction of the dock and warehouse along the Kodiak waterfront. Kt is immediately in front of the Erskine house, constructed by Alexander Baranov, manager of teh Russian-American Company, for fur storage and offices.

Know ans St. Paul's Harbor Kodiak was the second Russian settlement in Alaska.

# 15 ADVENTURERS SCALE MCKINLEY

Anchorage, Alaska, July 10— — Three women and 12 men scaled 20,320-foot Mt. McKinley yesterday in the greatest mass conquest of North America's tallest peak.

They flashed the word in a series of unprecedented long-distance telephone calls from the summit, using a tiny 8-inch transmitter weighing only six pounds.

The feat set three firsts:

— The party was the largest ever to reach the top of the mighty mountain 140 miles north of here.

—Never before had three women made the ascent at one time; only three had ever climbed McKinley previously, and in separate expeditions.

— Never had there been direct communication with the lower world from the continent's icy roof.

The first call was made to Seattle by the 17-member party's leader, Alvin E. Randall, 48, of Issaquah, Wash., about 2 p. m. after the 15 had fought through a snowstorm into blinding sunshine at McKinley's south peak.

Randall told Ome Daiber, operational chairman of the Seattle Mountain Rescue Council, two men in the group had to be left behind at the 17,700-foot camp because of altitude sickness, but the 15 who made the top were jubilant and in good condition.

# ESKIMOS SHIFTING THEIR WAY OF LIFE

## Supermarket Is Replacing the Old Trading Post

By LAWRENCE E. DAVIES
The New York Times

KOTZEBUE, Alaska, Aug. 17 —Aaron Milligrock sat in his tent today carving ivory bracelets for the tourist trade in this Eskimo village of 1,500 persons and 900 sled dogs.

He was desperate for ivory, which Eskimos in Nome and other points in northwestern Alaska also reported in short supply. It comes from the tusks of walruses, which normally are killed in great numbers every year for ivory and food.

"But walrus hunting has been poor this year," Mr. Milligrock said. "Ivory is $4 a pound at Point Hope instead of the customary price of $2. And my wallet's empty all the time."

He grinned as his wife, Tillie, collected $12 form a tourist for a piece of carving. She looks after the family finances. She had just walked in after a stroll on the pebbled waterfront road, carrying a baby on her back as another toddled beside her.

Kotzebue, long known as the second largest Eskimo village in Alaska, second only to Barrow, is growing.

It is estimated to be at least 85 per cent Eskimo. The Eskimos here, as elsewhere in the state, are adapting more or less successfully to a wage economy. The old trading post is becoming a supermarket.

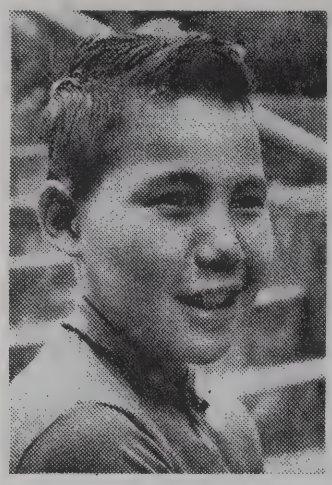
Rex Bowen, formerly of Vashon Island, Wash., and president of the Arctic Chamber of Commerce, has operated a store here for almost eight years. He debated a long time before risking an expansion into a self-service operation.

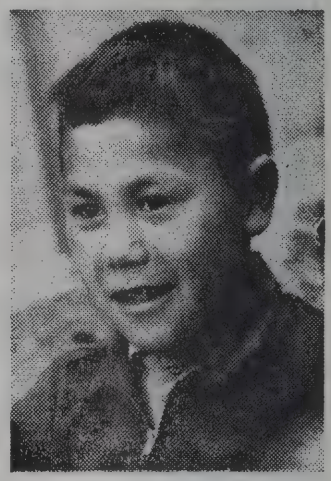
"But even the aging Eskimo women immediately began pushing shopping carts around and browsing among the shelves as if they'd been doing it all their lives," he said. "It has been very successful. The Eskimos are getting better educated and they like the wage economy."

This is disputed by some older residents, one of whom declared brusquely:

"They're getting lazier every day. They collect their welfare and child assistance payments and won't go out and work for what they get. 'Why should I work?' they ask, and then reply to their own question: 'I'm lazy I can buy Eskimo food at the store'."

The appeal of education is evident even to an infrequent visitor. The King Island Eskimos, who used to number around 250, according to Aloysius Pikonganna, take to their walrus-skin boats and make the long trip to the mainland every summer to get jobs or carve ivory. But fewer and fewer return home.





Eskimo children

"I've been staying here in Nome for seven years," Mr. Pikonganna said in the King Islanders' ramshackle carving and display room. "Two of my five children are of school age and we have no school house on the island. I doubt if more than four or five families go back to the island this fall."

Mr. Pikonganna, who had lived most of his life on King Island, said if he could acquire the ivory he could make $1,000 a season carving.

"Can you live on that?" a visitor inquired.

"Yes, not well, but we can live," he replied. "We have to pay more and more taxes and $5 in the store goes like a dollar."

At Nome this weekend, the Eskimos were able to see Charlton Heston and Sophia Loren in the movie "El Cid" at the Nomerama, and read on Page One of the Nome Nugget that the New York Yankees had been sold to the Columbia Broadcasting System.

In some of the villages the way of life has changed little, yet it is changing. One is rocky Little Diomede, which lies in Bering Strait with only two and one-half miles of water separating it from Soviet-ruled Big Diomede.

Mrs. Adrian Robinson, whose husband taught the eight-grade school there two years while she worked with the Eskimo parents, related that money did not interest the islanders unless they wanted a specific item—a gun, a new motor or a radio.

"Wouldn't you like to have $3,000 in the bank?" she asked a Little Diomede resident.

"What for?" he replied.

When they were not carving ivory to make a specific purchase, Mrs. Robinson said, the Eskimos were hunting walrus, seals, oogruk and polar bears as well as such birds as the murre and auklet, both of which they eat.

"They put the eggs in seal oil to keep the fresh in winter," she added. The men butcher the animals, the women divide and store the meat.

Mrs. Robinson reported that the islanders were alarmed when she and her family elected to stay there alone during their first summer's vacation.

"Big Diomede people come summertime, we go," she quoted the departing Little Diomede residents as saying.

But the Big Diomede "invaders" did not show up and she was delighted to report that four or five families had overcome their fears and were staying on the island this summer.

Here in Kotzebue above the Arctic Circle much of the talk is of prohibition, weather and copper. After a bitter campaign the village by a small margin voted itself dry last November. The election followed 17 months of experimentation with a village-owned liquor store, which turned in a profit of $64,000.

The operation, Kotzebue Liquor, Inc., was headed by Mrs. Edith R. Bullock, who manages the B. and R. Tug and Barge Company and is secretary of the Chamber of Commerce.

It underwrote village youth activities by building a skating rink and warm-up house and buying playground equipment.

It financed the municipal sanitary service, paid a policeman's salary and helped out with other projects.

The Rev. Earl Perisho, a 28-year-old Friends minister assigned here from Oregon, saw with other Kotzebue ministers an incongruity between the liquor operation and youth support and cautioned against having liquor readily available. They won the election and Mr. Perisho was elected mayor.

He said the village needed money, since a 2 per cent sales tax was its principal income, but he asserted:

"I've heard comments from parents that their children come home happy and sober and that people are cleaning up their homes."

The homes range from well-built frame houses to huts of corrugated tin or iron and of rough-hewn driftwood.

The liquor issue seems sure to come up again on the November ballot. One law enforcement officer noted it was legal for villagers to order intoxicants from Nome or Anchorage and he said they were buying it in quantities by the case.

Arrests for drunkenness this month, he said, were the greatest in three years and some bootleg stuff was being sold for $20 a bottle.

"When villagers start drinking and use up their supplies," he explained, "they want more right away and they're willing to pay a bootlegger almost anything."

It was late July before the last of the big floes that isolate Kotzebue by water in winter and spring floated out into the Arctic Ocean. Ships with machinery for development of a copper deposit on the Kobuk River by the Kennecott Copper Company and with supplies for Eskimo villagers on the Kobuk and the Noatak Rivers were delivered to this distribution center of northwest Alaska.

But the items are still piled up here while supplies in the villages run short. The year's snowfall was light and the rivers are too low for negotiation by barge. Kotzebue is counting on an economic revolution to result in this part of Alaska from a copper industry, but the weather, it fears, will

delay development a year.

Business leaders complained they had been trying for years to get the Army Corps of Engineers to survey the Kobuk in anticipation of just such an emergency but that the money had not been forthcoming from Congress.

The Eskimo is making some progress in the health field in the villages. For years physicians associated with the Public Health Service hospital at Kotzebue have been going on the radio late every day to prescribe treatment for ailments among residents in an area of 76,000 square miles.

For a long time teachers in schools of the Bureau of Indian Affairs acted as nurses. But in the last two years, Dr. Charles H. Neilson, the hospital administrator, related, a program has been pushed to educate a native in each village to take charge of the health program.

"The villagers go to the village clinic in the afternoon," he said. "A native nurse notes symptoms and takes the temperature. At 6 o'clock the nurses come on the radio and give us the information. What we do in return is to make a broad differential diagnosis. They have drugs available in the villages."

In the outlying villages or in the hospital here the payment is up to the Eskimo or other native who receives treatment.

"Some of the hospital patients pay their bills and others say they can't," Dr. Neilson said. "We treat them whether they say they can pay or not. We don't feel we can look into their pocketbooks. But two or three of the villages, through their village councils, now are paying almost the whole cost of medication."

Dr. Neilson, who got his medical training at the University of Cincinnati and liked Alaska so much on his first tour of duty that he came back, has two physicians and a dentist associated with him in the new hospital. About half of the personnel of 82 are Eskimos.

He, with others, viewed the transition of the Eskimos as sometimes frustrating.

"They encourage their children to go to school," he said. "The children finish their schooling, here in Alaska or in other states, come home and find no jobs. In the old days they had been trained to hunt and fish in those school years from ages 7 to 16 or 17. Now they lose out on that."

### Alaska to Invite Ex-Owners

ANCHORAGE, Alaska, Sept. 26 (AP) — Russia will be invited to take part in Alaska's 100th anniversary celebration in 1967, the State centennial commission decided yesterday. The United States bought the 586,000-square-mile area from Russia in 1867 for $7.2 million about 2 cents an acre.

# PROTECTION ASKED FOR POLAR BEARS

## Airborne Hunters Threaten Survival of Arctic Herds

The New York Times

FAIRBANKS, Alaska, Dec. 26 —Polar bears, those shaggy white beasts that provide subsistence for Eskimos and trophies for hunters, are becoming a matter of international concern.

Recently, Secretary of the Interior Stewart L. Udall included the polar bear on his list of animals threatened with extinction.

Senator E. L. (Bob) Bartlett, Democrat of Alaska, said in an interview here that he would press for an international treaty to protect the polar bear, about which "I have worried for years."

Three years ago Senator Bartlett carried on an elaborate correspondence with the Alaska Department of Fish and Game about the big animals, which spend their lives on Arctic ice floes.

"My fears were pacified at the time," he said, "but since then the hunting pressure has increased and I believe it is time we took some positive steps toward a treaty."

The Senator said he hoped an international agreement could be worked out between the United States, Canada, the Soviet Union, Norway, Sweden and Denmark (for Greenland).

The polar bear ranges hundreds of thousands of square miles on the ice of the Arctic Ocean.

In Alaska the hunting pressures against the polar bear have become particularly acute. The price of a "guaranteed kill" has dropped from $2,500 to as low as $500.

From villages on the northwestern Alaska coast — Kotzebue, Point Hope and Cape Prince of Wales—sports hunters with airplanes have doubled, tripled and quadrupled.

While most animals are taken relatively close to the Alaskan mainland, the airplanes in many cases fly far beyond the International Date Line to seek out the trophy-size male bears. These command the higher prices.

A number of parties interviewed by researchers for the state's fish and game department have reported they could see the Siberian coast plainly while hunting.

It has been reported here that light planes of American hunters are tracked by radarscopes on either side of the Bering Straits. If the hunters fly too close to the Soviet's 12-mile offshore limit, American radarscopes become black with the specks representing Russian interceptor planes.

It has been difficult to pin down any of these reports to a definite source or a definite incident.

Two years ago American jet planes were alerted here when Soviet planes threatened hunters who had overflown Big Diomede. This is a Russian island in the Bering Straits separated by three miles from American-owned Little Diomede.

The sport of polar bear trophy-hunting is abhorred by Eskimos for what they consider the inhumane aspects.

Sometimes the airplane hunters will chase the polar bears over the ice floes until the animals are exhausted. Then the plane lands and the hunter jumps out to shoot the bear. While fleeing from danger, the polar bear develops an enormous quantity of adrenalin, which makes it extremely hard to kill. Some hunters have had to pump as many as 19 bullets into a polar bear to kill him.

Since polar bears are usually taken outside the 12-mile limit, Alaska regulations are of no effect. Many hunters, it is reported, shoot directly at the animals from the planes.

# SOVIET AND NORWAY CURB SEAL HUNTING

The New York Times

MOSCOW Dec. 22 — The Soviet Union and Norway have agreed to suspend all hunting of the Greenland seal for five years because of a rapid decline in its numbers, Tass, the Soviet press agency, announced today.

The agreement was reached at a session of the Soviet-Norwegian Atlantic Sealing Commission, which has just ended in Moscow.

The accord comes into force in 1966, but the Soviet Union announced that its ships would discontinue hunting the seal beginning next year, Tass said.

The decision was reached after air surveys and scientific investigations by the two countries had shown that the Greenland seal was being overhunted and was threatened with extinction.

The Soviet-Norwegian agreement covers the Barents Sea, on which both countries border, and the White Sea, which is a large indentation in the northern coast of European Russia.

Dealers in New York said yesterday that they did not expect the agreement between the Soviet Union and Norway to have any effect on the American fur market. The Greenland seal is utilized primarily in Europe, while most American fur manufacturers utilize the Alaska seal.

# ALASKA U. TO BREED ARCTIC MUSK OXEN

WASHINGTON—The University of Alaska plans to establish a breeding herd of musk oxen to test the commercial potential of the animals, the National Geographic Society says.

The soft underwool of these ungainly wild arctic cattle is similar to cashmere and vicuna. Four ounces are enough to knit a feather-light sweater that will resist below-zero cold. In spring a musk ox obligingly sheds enough for two dozen sweaters.

John J. Teal Jr., who has raised musk oxen in Vermont, recently flew to Nunivak Island, off the Alaskan coast, to round up the nucleus of the university's herd. The musk oxen on Nunivak were introduced from Greenland stock by the United States Fish and Wildlife Service in the nineteen thirties.

Now found only in the Arctic in North America and Greenland, musk oxen once roamed the tundras of Europe and Asia as well, along with the hairy mammoth and woolly rhinoceros. Retreating before the great glacial advances, musk oxen penetrated as far south as Kentucky and Kansas, then followed the withdrawing ice sheets back to the northlands.

Musk oxen were hunted relentlessly for their meat and coats by Eskimos, whalers and explorers. Protected in recent decades, the herds have increased substantially.

The musk ox resembles a small, white-stockinged buffalo. Both males and females have horns—broad and massive at the base, sweeping downward then out and up to sharp points. A mature male may weigh 800 pounds.

The musk ox is not really an ox, but is related to sheep and goats.

## Science Conference Draws 500 to Alaska U. Campus

The New York Times

FAIRBANKS, Aug. 31—More than 200 scientists from other states joined 300 Alaskans at the University of Alaska campus today for the 15th Alaska Science Conference.

The five-day conference is the highlight of "Alaska Science Year," proclaimed by Gov. William A. Egan.

Today's opening session featured a discussion on the research grants available from the Federal Government. Participating were representatives of the Atomic Energy Commission, Department of Defense, National Aeronautics and Space Administration, National Science Foundation and the National Institutes of Health.

A day-long symposium on the Alaskan earthquake of last March is scheduled for Thursday.

The New York Times Sept. 24, 1964
**Site of the deposits (cross)**

# ORE DISCOVERED BY OIL COMPANY

## Iron Deposit Is Staked by Indiana Standard Unit

The New York Times

ANCHORAGE, Sept. 23—The Standard Oil Company (Indiana) disclosed today that one of its subsidiaries had discovered iron-ore deposits in Alaska which it estimated could produce nearly 1 billion tons of recoverable iron.

The deposits, which were staked and claimed by the Pan American Petroleum Corporation, are at the head of the Alaska peninsula about 200 miles southwest of Anchorage.

Randolph Yost, president of the subsidiary, said the discovery could rank, in terms of tonnage, as one of the top seven or eight iron-ore discoveries ever made. He asserted that the deposit might represent the largest reserve in the United States with the exception of those in Minnesota.

Mr. Yost said that development of the deposits would be slowed by the need for more markets and mills on the West Coast and in other parts of the Pacific region.

This could take 10 to 15 years, he observed.

The region in which Pan American Petroleum has staked its claim is one of the most rugged areas in North America.

Geologists and technicians in the prospecting team relied heavily on helicopters and walkie-talkies for their basic transportation and communication needs.

Mr. Yost said the ore contained an average of about 15 per cent iron, which could be reduced to a concentrate of about 95 per cent iron by using available gas supplies in the area.

In its present concentration, the iron content is less than some of the low-grade reserves now being mined in this country, Mr. Yost explained.

Mr. Yost also said that the deposits contained a substantial amount of titanium, but that preliminary reports indicated that it had no commercial value. Industry observers noted that this high titanium content would prove costly in the separation process.

The petroleum executive added, however, that Japanese smelters have been processing high-titanium-content ores for some time, although no American companies are known to be using this kind of ore at present.

Several observers of the mining industry also believed that the petroleum company was being "a little optimistic in its estimates about the ease in extracting ore."

Mr. Yost's estimate of the company's ability to reduce the ore to a 95 per cent concentrate was based on the fact that the discovery was within pipeline distance of the company's shut-in natural-gas reserves at Cook Inlet. The gas would provide the power supply in the reduction process.

He also said that the ore deposits were close enough to ice-free deep water to afford year-round transportation to ship the ore to both United States and foreign markets.

# *N.Y.U. Co-Ed at Home in Igloo or City Apartment*

## *Eskimo Passes for a Typical Greenwich Village Habitue*

By GAY TALESE

Nov. 16

On Charles Street in Greenwich Village lives a 21-year-old Eskimo girl named Katie Egowa. She has fur parkas in the closet and boots her mother chewed into shape; she has relaxed in igloos and is a connoisseur of whale's meat and caribou.

As far as she can remember, nobody has ever tried to sell her a refrigerator; but if such an event had transpired, she said, she would admit it willingly, for she is neither irritated by nor sensitive to the familiar cliches concerning Eskimos in the Arctic.

In her case, in fact, the cliches are largely true.

Her family, which was seminomadic and dwelled along the Arctic Ocean in temperatures ranging from 60 degrees below zero to 40 above, hunted for whales, seals and Arctic foxes, life was getting enough to eat and the biggest challenge in and staying alive.

Eskimo women did most of the fishing and also chopped up the whales that were caught. And this wuld have been Katie Egowa's role today, she says, if she had not contracted tuberculosis in 1952 and been flown 500 miles to a hospital in Fairbanks, Alaska.

There, after her recovery in 1954, she was introduced to another world. She saw trees for the first time, and automobiles —and heard English. She attended the University of Alaska for two years; and this fall, after winning a one-year scholarship to New York University, she left Alaska for the first time.

Yesterday she seemed very at home in Greenwich Village. Briefly she posed in the sun in a parka for a photographer, and complained about the weather. Then she slipped off the parka and sat in her third-floor apartment in the walk-up on Charles Street and commented on life in New York.

The New York Times
**Katie Egowa in her parka on roof of her apartment.**

First of all, she said, her N.Y.U. classmates do not know she is an Eskimo. They assume she is Chinese of Japanese; or possibly, because she is now wearing avant-garde shoes characteristic of Village guitar players, a beatnik.

When she goes to Chinatown to dine, as she did recently one night, the waiter automatically hands her chopsticks.

"I'll have some cutlery," she quickly tells him, in English more perfect than the Eskimo she rarely speaks anymore.

The horns of automobiles bewildered her at first. In Fairbanks, she said, motorists never honk their horns except when they have spotted someone they know and are tooting "hello." When she first walked down a New York street and heard a honk, then another, then a third — she turned with a start, expecting to see an amazing number of Eskimo friends.

The abundance of trees in bloom, of course, and the sight of skyscrapers blocking the view of the horizon are two of the major visual adjustments she has had to make in New York.

In Alaska, she said, buildings mostly were one-story; the horizon was a grand and ever-present scene, and the ground was never without snow.

After completing her year at N.Y.U. and after getting a degree from the University of Alaska in sociology, she hopes to return to her family's old haunt along the Arctic Ocean. There she will see again the dog teams pulling whale's meat and taste again the seal-oil flavor in all her food; but she hopes, too, that she can make Eskimo children see, through her description, the world that she now is seeing.

And maybe, she said, she will encourage others toward a life that will offer greater rewards than merely successful hunting expeditions—and survival.

## *Trees, Skyscrapers and Car Horns Seem Novelties*

## Navy Patrol Plane Crashes With 12 Aboard in Alaska

ANCHORAGE, Alaska, Nov. 27 (UPI)—A Navy patrol plane carrying 12 men crashed into a hill four miles north of Cape Newenham in western Alaska today. A Navy spokesman said there were "apparently no survivors."

The plane, a P2V Neptune bomber, was based with Squadron VP2 at the Whidbey Island (Wash.) Naval Air Station. It was flying a routine "ice reconnaissance" mission.

An extensive air-sea rescue alert involving Navy and Coast Guard planes and ships was launched when the plane failed to report its position to the Kodiak naval station, 250 miles from the crash scene.

Wreckage of the plan was sighted by one of the search planes 200 feet below the crest of a hill near Cape Newenham.

# CESIUM LEVEL UP IN ESKIMO TOWN

## Body Concentrations Top Government-Set Limits

By JOHN W. FINNEY
The New York Times

WASHINGTON, Sept. 1 — The concentration of a radioactive fallout material in the bodies of Eskimoes in a northern Alaskan village has exceeded this summer the permissible levels established by the Federal Government.

Measurements taken by the Atomic Energy Commission in early July of 27 Eskimoes show that the average level of cesium 137 in the population of Anaktuvuk pass has reached 1,170 micromicrocuries with a level in one individual of 2,200 micromicrocuries.

Cesium 37, a relatively long-lived radioactive material produced in an atomic explosion, is one of the major constituents of fallout from atmospheric weapons testing. Since the material tends to concentrate in the body muscles, where it can irradiate the reproductive organs with its gamma radiation, it poses a genetic hazard.

To limit the exposure to the reproductive rgans, the Federal Radiation Council has established radiation protection guides specifying that in general populations the average level of cesium 137 should not exceed 1,000 micromicrocuries with a limit of 3,000 for any one individual. The average level has been set lower to allow for variations in a population group.

The guides, which represent more warning than danger levels, were designed for the normal peacetime uses of atomic energy. Since the council however, has never published comparable standards for fallout, the guides represent the only reference for judging the hazard of weapons testing.

The high cesium fallout levels in the northern Alaskan village —about 100 times higher than those in the rest of the United States—arise from an unusual combination of geographic and ecological factors.

Because of its extreme northern latitude, the village bears the brunt of the fallout from the large Soviet tests in the past at the Russian Arctic test site of Navaya Zemlya. The continuing fallout in Alaska has come largely from the Soviet tests.

Because of the peculiar ecological situation in Alaska, the fallout materials tend to become concentrated in Eskimoes. The cesium is absorbed by lichens. During the winter, caribou eat the lichens, and the Eskimoes in turn eat the caribou. At each step in the food chain there is a buildup, or continued to observe the cesium

Since 1962, the commission's Hanford, Wash., laboratory has continued to observe the cesiu levels in four Alaskan villages, using a portable whole body counter. By last year, the levels were reaching the point at Anaktuvuk Pass where H. M. Parker, manager of the laboratory, was warning Congress that the Government ought to consider countermeasures to protect the population.

Since last year, the cesium levels at the village have shown a substantial, although fluctuating, increase. The levels measured on July 7 were almost exactly double those observed in July last year.

The recent levels were also more than twice those measure as recently as last March — an increase that demonstrates the link to consumption of caribou. The Eskimoes have been consuming caribou taken in late May just after the animals migrated from their winter range where they were feeding almost exclusively on lichens.

Anaktuvuk Pass, with a population of 100 Eskimoes, is in the Brooks Mountain Range.

# *Controversy Rages Over Plans For Big Alaska Power Project*

By LAWRENCE E. DAVIES
The New York Times

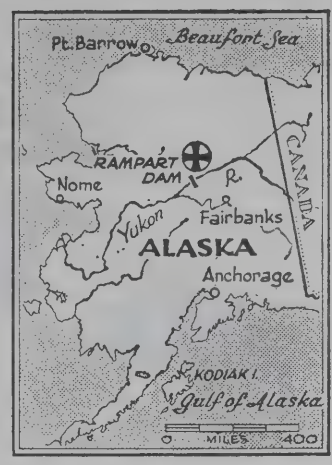
FAIRBANKS, Alaska, Aug. 21 — A major battle is under way here over one of the vastest power projects ever proposed and it promises to generate enough heat to warm even the frigid interior of Alaska.

The proposed 5 million-kilowatt Rampart Dam on the Yukon River 100 miles northwest of Fairbanks is under heavy criticism from conservationists. They have support from a report of the Federal Fish and Wildlife Service. The report, however, is under attack from dam proponents as distorting facts.

"We are not 100 per cent against Rampart Dam," said Daniel W. Swift, vice president of the Alaska Conservation Society, "but we're probably one of the greatest thorns in the side of people who are promoting its construction. We are very much concerned with the economic problems of the state, but we are also concerned with some of its esthetic values and its wildlife."

Mr. Swift, a faculty member of the University of Alaska here, said the 400-member society would withhold approval of the project "until it is shown to be a good thing for Alaska's economic development and its future long-run interest."

Jack White, an Anchorage real estate and insurance broker who heads Yukon Power for America, Inc., is leading the fight for the Rampart development. He said that funds would be used to hire analysts to go over the Government report.




The New York Times Aug. 22, 1964
Cross marks project site

Mr. White said that Robert McFarland, president of the Alaska Federation of Labor, said at the Yukon power group's last meeting $100,000 could be obtained from organized labor to back the Rampart development.

The Fish and Wildlife Service report submitted to the Army Corps of Engineers last spring recommended against construction of the project.

"Nowhere in the history of water development in North America," it stated, "have the Fish and Wildlife losses anticipated to result from a single project been so overwhelming."

There is no argument over the engineering feasibility of the gigantic project. And the Senate Committee on Public Works, in a 1962 report on the market for Rampart power, declared that if the dam were built on schedule its power output could be sold "substantially as it becomes available."

This would have meant, in 1962, the start of power production in 1972, with the full 5 - million - kilowatt capacity reached in 1990.

Some of the project's figures are staggering. the cost, in 1962, was put at $1.3 billion spread over the 10-year construction period. A reservoir 400 miles long and 80 miles wide, with an area greater than that of Lake Erie, would be created in central Alaska, 750 miles from where the Yukon River empties into the Bering Sea.

Instead of being 215 feet above sea level at the dam site, the Yukon would be lifted to a height of 445 feet. The dam itself would be a concrete gravity structure 530 feet high with a top length of about 4,700 feet.

The Fish and Wildlife Service reported that 1,600 persons would be displaced by the project. They live in small villages and isolated settlements in the area.

The project's supporters have voiced confidence that the huge block of Yukon power can be disposed of at a rate of two mills per kilowatt hour at the dam site. They envision the rise of great electro-metallurgical industries at tidewater points such as Anchorage, with transmission lines carrying low-cost power to the plants.

The power would be needed 30 years or so hence, they contend, even if the cost of nuclear power is drastically reduced. The Senate Committee report said the power could be delivered in bulk to centers of use at about three mills per kilowatt hour.

The Fish and Wildlife report declared that not only would losses to water fowl populations be evident in the United States, Canada and Mexico if the dam were built, but that there were "no known means" that would assure successful passage of fish to their spawning grounds above.

Mr. White expressed sympathy with "the lofty goals of protecting wildlife" but he added: "We think we can get those 5 million kilowatts without destroying the fish and wildlife."

Anthony Netboy of Portland State College, principal speaker at the last meeting of the Yukon power group here, asserted that there "seems to be plenty of technology available in the world to handle salmon runs at high dams." He added:

"The duck and geese hunters, aided and abetted by the small arms and ammunition manufacturers and their mouthpieces, are screaming about the loss of ducks and geese if the dam is built, although little scientific evidence has been presented that any sizable losses of this kind would occur, or that compensating measures are not available."

Mr. White, whose board of directors includes a group of Alaskans prominent in education, political, labor, professional and publishing fields, predicted Congressional authorization for the project next year.

The University of Michigan is about to undertake a study of the Rampart Dam project under a grant from the Natural Resources Council of America. Dr. Stephen Spurr, dean of the university's School of Natural Resources, and Dr. Justine Leonard, in charge of research for the State of Michigan's Department of Conservation, took a recent tour of Alaska with Dr. Richard A. Cooley of Juneau, director of the Alaska Center of the Conservation Foundation in New York. They talked with conservation and power groups. They expect to hire economists and spend 12 to 18 months on the report.

# AIR PIONEER ENDS HIS ALASKA SAGA

## Wien Retires After 40 Years of Flying in the North

The New York Times

FAIRBANKS, Alaska, Aug. 22—Noel Wien, Alaska's oldest living pioneer aviator, has gone into semi-retirement in Seattle after 40 years of flying in the North.

The founder of Alaska's oldest airline and his wife, Ada, where honored at a testimonial dinner Tuesday night at the University of Alaska. More than 200 contemporaries, associates and friends attended. Lowell Thomas Jr., son of the commentator, was master of ceremonies and the senior Thomas sent tape-recorded greetings from his home in Pawling, N. Y.

Mr. Wien, 65 years old, a former Minnesotan, flew the first airmail in Alaska in 1924 in a single-engine Hisso-Standard aircraft. This introduction of the airplane began the gradual displacement of dogsled mail routes.

The airline that Mr. Wien later established, Wien Alaska Lines, has grown into a company flying 4,500 route miles from Juneau, in the Southeastern Panhandle, to St. Lawrence Island in the Bering Sea, 40 miles from Siberia; and from Fairbanks to all points in the Arctic.

The company's revenues exceed $7 million annually. Among its aircraft are one four-engine Constellation, used to supply the Distant Early Warning Line sites at Barter Island and Barrow; two turboprop Fairchild F-27's, and numerous other twin-engine and single-engine planes.

Last summer, Wien Alaska Airlines took over the former Pan American World Airways route connecting Juneau, Whitehorse, Yukon Territory, and Fairbanks. It uses the Fairchild planes on this service as well as on the runs to Nome, Kotzebue and Barrow.

The company has a heavy tourist promotion program. Each summer its flights to the Arctic and the Northwestern coast are solidly booked with "package tour" groups from what Alaskans call the Outside.

Mr. Wien, who had three brothers n Alaskan aviation, sold his controlling interest in the company to his younger brother, Sig, who now is president. Fritz Wien is operations manager. Another brother, Ralph, was killed in a crash at Kotzebue a few years ago.

Noel's sons, Merrill and Richard Wien, are both chief pilots for the airline.

Mr. Wien was never considered a daredevil aviator. He belonged in the air. He understood the hazards of early-day flying. Above all, his associates say, he was safety-conscious at all times, aware of possible mechanical failures to airplane engines, and he respected the weather hazards.

In the nineteen-twenties, when aviators were gaining fame and glory in attempting to fly the oceans, Mr. Wien chose to pioneer the aviation routes in Alaska — a land with neither a road nor railroad network.

He opened the way in the north for such other pilots as A. A. Bennett, Joe Crosson, Ed Young, Harold Gillam, Frank Dorbrandt, Russell Merrill, Steve Mills and dozens of others.

In 1925, Mr. Wien flew the first commercial flight to Nome in a single-engine Fokker. In his party were a group of miners, including Norman C. Stone of the Fairbanks Exploration Company, a division of the United States Smelting Refining and Mining Company of Boston.

The plane turned over and Mr. Stone and his party had to finish the trip to Nome by boat, but it was the beginning of the first long-distance airline service in Alaska. Mr. Wien made several trips to Nome that year.

In the fall of 1926, Mr. Wien and his brother Ralph acquired one of Sir Hubert Wilkinsons's Stinson Detroiters, which had been used for polar exploration, and went into business for themselves.

Mr. Wien's early flying experiences in Alaska were with a variety of partners and the companies for which he flew or that he operated had various changes of ownership. The present company evolved from earlier mergers in the late nineteen-thirties.

By 1929, Mr. Wien had completed most of the pioneer flying in the state. In later years he was to take air-rescue missions into Siberia and then fly the first runs between Alaska and Seattle.

After the fatal crash of the humorist Will Rogers and Wiley Post, the aviator, at Point Barrow in 1935, Mr. Wien flew to Seattle with the first news pictures of the tragedy.

The testimonial for Mr. Wien was the occasion for the gathering of many Alaskan fliers. Another pioneer aviator, Robert Reeve of Anchorage, president of Reeve Aleutian Airways, presented to the University of Alaska a gallery of oil portraits of 35 Alaskan "bush" pilots. Among the pictures was one of Mr. Wien in a leather helmet.

The portraits formerly had been hung in the Anchorage International Airport terminal, but were removed following the earthquake March 27 when the building was substantially damaged.

Wien Alaska Airlines

### Alaska's Economy Pivots on Propellers

**In some of the more remote areas of Alaska, such as Kotzebue (shown here), airplanes are met by dog-team taxis. Of all transportation modes, dogs are the most reliable in getting started in below-zero weather encountered in parts of the state.**

# Ice Test Ahead For Starlifter

FAIRBANKS, Alaska, Dec. 31 (AP). — America's newest and largest transport plane, the Lockheed C-141 Starlifter, has arrived at Eielson Air Force Base here for a 60-day series of cold weather tests.

It was 40 degrees below zero when the plane landed Tuesday. Temperatures of 20 below or colder are expected throughout the test series. The Air Force hopes to determine the effect of Arctic weather on the plane and its electronic equipment.

## Waiting Is Apprehensive For a Bush Pilot's Wife

NOME, Alaska (UPI)—Mary Pilcher's husband, Harold, is a bush pilot.

The weather is treacherous and landing strips are few and far between, although bush pilots thing nothing of landing on the tundra or a frozen river.

Mr. Pilcher flies for Wien Alaska Airlines. Mrs. Pilcher said the line had lost an average of one pilot a year as the result of accidents.

"I thought I lost 'Pilch' three different times, but he always showed up," she said.

"Once a friend at F.A.A. called," she said, "and told me he was just then making a crash landing on the ice and they would call me back in 10 minutes to let me know if he made it or not. He did.

"I don't worry about him now. I figure his three narrow escapes completed the bad luck cycle. I guess it's the Irish in me."

### Alaskan Peak Scaled 3d Time

ANCHORAGE, Alaska, July 28 (AP)—A Japanese-led team of mountaineers reported success Tuesday in an assault on 18,008-foot Mount St. Elias, the third-highest peak in North America. The ascent was the third ever recorded and the first since 1946. The mountain, on the Alaska-Canada border, was first scaled in 1897.

### Few See U.S. Alaskan Park

The lowest attendance at any federally run area open to the public in 1962 was at the Katmai area of Alaska. It drew 300 visitors.

# FALLOUT STUDIED IN ARCTIC PEOPLE

## Aim Is to Measure the Food Contamination in Alaska

By WALTER SULLIVAN
The New York Times

BARROW, Alaska, July 17—The twin-engined transport plane of the Navy's Arctic Research Laboratory took off from here this morning on a strange mission, the ferrying of 5,000 lead bricks from Kotzebue to Arctic Village.

Its assignment is part of a Federal study to determine how much atomic bomb fallout has contaminated the food of Alaskan Eskimos and Indians. The bricks are used with 5,000 others to shield the subjects from outside radiation—particularly cosmic rays—while a sensing device then measures the radioactive materials that have been incorporated into their bodies over a period of time.

The laboratory here, operated for the Office of Naval Research by the University of Alaska, is aiding in the study as part of its support of polar research projects.

Those who live off the land in northern Alaska are under scrutiny because of the selective manner in which mosses and lichens on the tundra pick up and retain fallout material. These plants are eaten by caribou that, in turn, are hunted by the Indians and Eskimos.

The tests are being carried out for the Atomic Energy Commission in such communities as Anuktuvuk, in the path through which hordes of caribou migrate across the Brooks Range twice each year.

The Anuktuvuk Eskimos are largely dependent for food and clothing on these migrations. They are believed to have one of the highest burdens of radioactivity of any group of people in North America.

In each community 100 inhabitants are given the whole-body radiation test, and in some places this constitutes more than half the population. Other locations include Barrow, Kotzebue, Point Hope and Fort Yukon. Only those 14 years of age or older are being tested.

According to Max Brewer, director of the Arctic Research Laboratory, the summer caribou population on the north slope of the Brooks Range has grown so large that many of the animals are falling victim to diseases such as brucillosis and hoof rot.

On a recent flight, he said, they looked like ants on the treeless slopes. There are perhaps a half million there, he said. The overpopulation seems to have resulted from the killing off of wolves by hunters. The caribou, spared their natural enemies, multiply until they overtax the food supply and become weakened.

This is in contrast to the situation reported in recent years from the barrens of the Canadian Arctic, where Eskimos dependent on caribou have starved because the herds were so depleted.

The laboratory planes also help the Fish and Wildlife Service of the Department of the Interior in its annual census of polar bears. The increasing use of light planes to locate the bears on the polar pack ice, with land hunters nearby, has been a source of concern to conservationists. The most recent flights, however, have not shown any dramatic drop in bear population.

Mr. Brewer was host today to a group of visiting polar specialists who are on a tour of research facilities in the North. The laboratory receives a sizable portion of the Navy's $2 million annual budget for ARctic research.

Much of this goes into air operations, not only in support of other Government projects but also to supply the two stations that the laboratory maintains on platters of ice in the Arctic Ocean. Both have drifted past the North Pole and far to the east of Alaska. One, Arlis 2, is moving toward the east coast of Greenland. The other, T-3, seems to be circling back toward the coast of Canada and Alaska.

The laboratory intermittently operates 21 camps that provide shelter for scientists who wish to work in the field. Eight of the camps were smaller radar stations of the Distant Early Warning Line until they were closed down as superfluous. Last year 229 scientists and technicians from a number of universities and Government agencies made use of the laboratory's facilities.

One of the studies here concerns the effect of hibernation on the longevity of squirrels. The findings, described by Mr. Brewer, are reminiscent of the old saying that the hearts of all mammals beat about the same number of times in a typical lifetime. The elephant's heart beats slowly and he lives long; the mouse's heart beats like a trip-hammer and its life span is correspondingly short.

When a squirrel hibernates, its pulse drops to one or two beats a minute and its body temperature falls to within a few degrees of freezing. The squirrel which curls into a ball can be tossed about like a football without awakening. However, it has been found that, if the squirrel is kept awake for its normal eight-month period of hibernation, it becomes senile in 2½ years instead of five.

# QUAKE LIFTED LAND 60 FEET

Nov. 20

WASHINGTON (AP) — The Alaska earthquake March 27 sent the ocean floor in the Gulf of Alaska surging upward by as much as 50 feet in the greatest known uplift of land, the Coast and Geodetic Survey said today.

The survey said its measurements showed the land rose 60 feet in three places between Kodiak and Montague Islands near Prince William Sound — the center of the earthquake.

This is slightly higher than the greatest rise previously recorded — a 47.3-foot uplift at Bancas Point in Disenchantment Bay, Alaska, in the 1899 Yakutat Bay quake.

Rear Adm. H. Arnold Karo, director of the survey, disclosed the earth shifted horizontally 15 to 20 feet between Montague Island and Latouche Island. The two pieces of land moved closer together that much.

On Kenai Peninsula, Adm. Karo added, whole mountains moved five feet. But he said it was impossible to tell if one group of mountains moved five feet north or if a nearby range traveled the same distance south.

While the ocean floor was hurled upward, some dry land sank considerably. The fall was 3.2 feet at Seward and 5.6 feet at Portage.

# ALASKA PROBLEM; GETTING IT THERE

## Mine Official Puts Annual Potential at $5 Billion

By JEROME F. SHELDON
The New York Times

FAIRBANKS, Alaska — Transportation remains the biggest block to realizing Alaska's potential annual mineral production of more than $5 billion, according to the general manager of the New Mines Division of Kennecott Copper Corporation.

The manager, Michael J. O'Shaughnessy, discussed the problem recently in an address to the Fairbanks Chamber of Commerce.

Last January, Kennecott acquired extensive copper deposits on Ruby Creek, 15 miles north of the village of Kobuk and 50 miles above the Arctic Circle in Northwestern Alaska. It paid about $3 million for the claims, after six years of test drilling by Bear Creek Mining Company, its exploration arm.

Though surface exposures did not prove promising, better ore potential was developed below the surface in the hilly, wooded region.

Kobuk village is 254 miles upriver from Kotzebue, on the Northwestern Arctic coast, or about 175 miles due east from Kotzebue and about 325 miles by air from Fairbanks.

Normal freighting to the region is by ship or barge from Seattle through the Bering Sea, Bering Strait and to Kotzebue Sound, then by shallow-river barge upriver to Kobuk and 15 miles overland to the mine site.

"The sea route is hazardous and subject to delays caused by the ever-present ice packs and the river navigation is dependent upon the time and quantity of the seasonable rain in the river valley," Mr. O'Shaughnessy said.

"Our original plan was to take a small mining plant with one year's supplies into the mine site last summer and to commence sinking a shaft this fall. However, the ice pack prevented our equipment from reaching Kotzebue before late in July, and the Kobuk Valley was bone dry until the end of August.

"As a consequence, we could only shuttle our equipment and supplies about 75 miles upriver during the dry season and move our materials another 100 miles upstream when the rains came this year.

"We then hope to complete the freighting project the last 50 miles overland by tractor train during this winter."

Mr. O'Shaughnessy said in an interview that Kennecott expected to spend "several million dollars in the next two years" to develop its Kobuk property. An 1,100-foot shaft will be sunk next summer to assess potential production.

Now one of the world's largest copper producers, Kennecott started in the Wrangell Mountains of south-central Alaska. Its mines near McCarthy, discovered at the turn of the century, were served by the $20 million Copper River and Northwestern Railway, completed in 1911 and abandoned in 1938 when the mines were worked out.

"The solution of the transportation problem made the original Kennecott mine a successful venture," Mr. O'Shaughnessy said. "The same problem faces us today at Ruby Creek, and faces almost all of the state of Alaska."

He said the state's highway system should be extended to the Seward Peninsula, with feeder roads developed to open up natural resources. He also urged better use of inland waterways and the construction of more airfields.

# OIL BRIGHTENING ALASKA OUTLOOK

## Major Concerns in Race to Develop Vast Deposits

By LAWRENCE E. DAVIES
The New York Times

FAIRBANKS, Alaska, Aug. 19—Despite the earthquake that left parts of south-central Alaska prostrate last spring, many Alaskans see a bright long-term economic outlook for the 49th state and believe oil is the key to that future.

Nineteen major oil companies are exploring or producing in Alaska. Some have spent millions on abandoned dry holes. The Kenai Peninsula below Anchorage is yielding 30,000 barrels a day from more than 50 producing wells.

Here in Fairbanks, the "capital" of interior Alaska, interest is focused on exploratory drilling on the Arctic slope, hundreds of miles to the north above the rugged Brooks Range.

Some enthusiastic industry observers believe that in future decades oil may be produced in that area in quantities rivaling the output of some of the rich Middle East fields.

At a dinner in Anchorage last October, imaginations were fired by an announcement from Samuel F. Bowlby, a vice president of Shell, that a drilling platform would be built this year at a cost of $5.5 million. From this platform, 20 or more wells could be drilled into the soil formations under Cook Inlet, he said.

The platform was to be built to withstand some of the world's most difficult drilling operations under the rigors of high tides and winter ice, Mr. Bowlby added.

This week, after being towed from a shipyard in the San Francisco Bay area where it was built by the Kaiser Steel Corporation, the platform was sunk into place. A drilling rig 173 feet high and living quarters for 50 men are to be placed on the platform.

R. R. Robison, Alaska division production manager for Shell, said the platform should be ready for drilling operations by December.

Exploration and drilling are going into high gear on the Arctic slope, where the Navy during and after Wold War II proved there was oil in commercial quantities. A half dozen seismic crews are busy on the north slope and two rigs that were drilling there last winter are being prepared to continue their work.

Richfield has just signed a contract with the Federal Department of the Interior for exploration and gas and oil development on 590,812 acres near the Arctic Ocean more than 350 miles above Fairbanks.

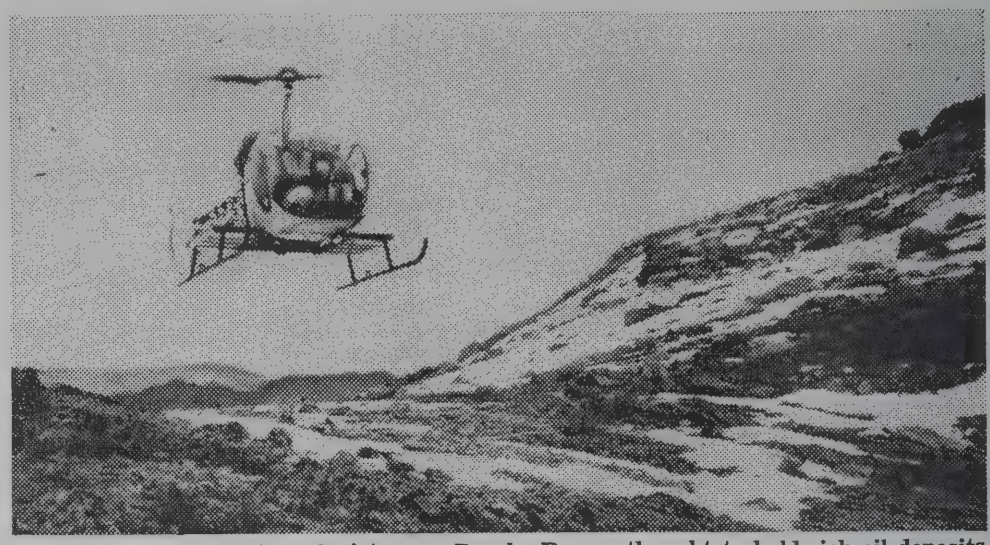
The company has agreed to drill at least three exploratory wells and spend a minimum of $1.3 million before Jan. 31, 1972.

The state has applied for title to 1.5 million acres of land along the Arctic Ocean between the naval petroleum reserve and the Arctic wildlife range. This is part of the 105 million acres Alaska is entitled to choose for itself under the Statehood Act.

John T. Rowlett of Fairbanks, a consulting petroleum engineer familiar with the north slope situation, said that activity there had led to "some dry holes, some producers and some unannounced results."

"I can easily think of 75 to 100 years of increased activity in that enormous area," he asserted. "I think we've already discovered the obvious fields in other parts of the country and now the geological indications are so good in this spanking new area that we can expect to find some major oil fields in the Arctic.

"The potential is there to make it one of the most attractive research areas on the North American continent."



Helicopter carries Shell geologists over Brooks Range, thought to hold rich oil deposits

# *Oil Trucks Head for Arctic*

By Robert G. Knox
*The Christian Science Monitor*

**Anchorage, Alaska**

Heavy oil field trucks will be able to drive north from the end of Alaska's highways near Fairbanks this winter on a 400-mile journey over a new winter road. It may help unlock vast petroleum deposits in the Arctic.

Alaska has a young but growing oil and gas industry centered, as yet, in the Cook Inlet area near Anchorage. Despite this concentration of production, exploration has been active in other areas of the state. Geologists appear nearly unanimous in labeling as most promising the North Slope area of the Brooks Range, just south of the Arctic Ocean.

Several of the major oil companies, including Sinclair, Richfield, Standard Oil of California, Shell, and British Petroleum, are currently exploring the untapped resources of this North Slope area. However the difficulty and expense of moving in equipment and supplies has retarded the work.

An Anchorage construction-trucking firm owner came up with the idea for a winter road.

John C. Miller, head of Frontier Contractors Company, believed strongly enough in the feasibility of the road to make an exploratory trip over the untried trail this past winter using two tractors hauling three logging sleds loaded with supplies. His tractor train made the trip over the frozen wilderness in 18 days of traveling.

Mr. Miller is convinced heavy-duty oil field trucks can follow the same winter route and eventually cut down travel time to five to seven days.

The present problem can be shown from the experience of one of the major companies, British Petroleum, in getting a drilling rig into the North Slope area.

The rig was barged down Canada's Mackenzie River during the short summer open-water season, towed into the Arctic Ocean, and then back up the Colville River in Alaska. Then the rig was put ashore but it was impossible to travel overland until the arctic muskeg was frozen by winter cold. And throughout the waiting period it was necessary to pay stand-by time for the crew and equipment.

Even before last winter's exploratory trip, Mr. Miller's belief in the winter road idea received support. He took the plan to D. L. Simasko of Anchorage, an independent oil and gas broker, who helped map out the trail and then flew the proposed route in both summer and winter to make the final selection.

Mr. Miller also received assistance from seismology firms, active on the North Slope, who agreed to purchase his tractors — if he could deliver them. Petroleum firms active in the area also placed orders to buy the drums of fuel he would carry on his sleds.

But the burden of proof was still on Mr. Miller: All the orders were on a delivered basis. If his tractor train couldn't negotiate the untried trail it was no sale. The five-man crew headed north into the wilderness from the end of roads early in March. At the last minute Mr. Simasko had agreed to go along. As he tells it now:

"I went as an Indian scout, as the cook, and as an adventurer."

Because of the many deep canyons the wagon train had to wind through it was impossible to maintain radio contact with Fairbanks. A bush pilot was hired to fly over the train several times daily and the crew talked with him by walkie-talkie radio.

At night the train would usually camp near a frozen lake where the pilot could land. At dawn Mr. Simasko would go up on a scouting flight of the trail ahead.

"Other freighting outfits had been over parts of the trail, some as far back as 1936," Mr. Simasko said. "But once we reached Crescent Creek in the John River Valley—about two-thirds of the way—we were completely on our own."

# SOVIET BUILDING 2 ATOM ICESHIPS

## Each Breaker Will Contain 2 Reactors for Power

WALTER SULLIVAN
The New York Times

GENEVA, Sept. 5—The Soviet Union plans to build two new atomic-powered icebreakers, the first to be placed in operation by 1971.

It has decided to concentrate on such vessels rather than embark on the construction of a nuclear-powered cargo fleet.

This was reported here today by A. M. Petrosyants, chairman of the Soviet State Committee for the Utilization of Atomic Energy. He said, as well, that the safety record of Soviet power reactors was such that his Government would not hesitate to place such a plant within a large city.

Mr. Petrosyants spoke at a news conference held at the United Nations International Conference on the Peaceful Uses of Atomic Energy. He had just returned from a trip along the coast of Sweden on the American nuclear ship Savannah. The overnight cruise was to demonstrate the ship to conference delegates.

Although Mr. Petrosyants had nothing but praise for the Savannah, he said the problem of his Government was to keep Arctic shipping on the move all winter. Most of the Soviet coastline faces the Arctic Ocean.

The cargo ships have to enter port to load and unload and can be fueled at the same time, he said. On the other hand, it is advantageous to keep big icebreakers on the move all the time. Hence it is for them that the almost unlimited cruising range of atomic power is most valuable.

The new ships will carry two reactors compared with three in the Lenin, the first such ship ever built. The new reactors, he said, will be sufficiently reliable so that two will be enough.

### Soviet Plans Arctic Pipeline

LONDON (Reuters) — The Soviet Union plans to build the northernmost gas pipeline in the world next year in the Arctic where the mercury drops to 60 degrees below zero and stays below freezing 250 days a year, the official press agency Tass reported recently.

# *Soviet Paper Says U.S. Planes Try to Violate Siberian Border*

## *Dispatch From Bering Strait Area Holds Attempts Are Made 'Fairly Often'*

The New York Times

MOSCOW, Nov. 4—A Soviet newspaper charged today that United States aircraft were trying "fairly often" to violate the fog-shrouded Soviet-United States frontier in the Bering Strait off Alaska.

The accusation in Trud, the trade-union newspaper, appeared in an account of border duty in the area of the Diomede Islands, the only place where Soviet and United States territories adjoin.

A Trud correspondent, L. Lebedev, recently visited the Soviet outpost island of Ratmanov (Big Diomede), in the strait between Alaska and Siberia. Two miles away beyond the International Date Line is the United States-held Little Diomede.

Describing the frontier as "restless," the correspondent wrote:

"Planes of the United States Naval Air Force fairly often try to violate the boundary of the U.S.S.R., approaching Soviet territorial waters."

Mr. Lebedev said that Soviet frontier troops had all the means necessary to "keep uninvited guests in check."

"It is only because of the self-restraint of the soldiers, awareness of their high responsibility toward the motherland, a desire to avoid even the smallest conflict that no shots ring out here on the border when planes with United States identification try to penetrate the airspace of the Soviet Union."

The latest publicized incident in the region occurred at the height of the missile crisis in October, 1962, when the Soviet Government protested the flight of a United States plane over Chukchi Peninsula in northeast Siberia.

President John F. Kennedy replied that the plane, without arms or photographic equipment, had been on an air-sampling mission between Alaska and the North Pole and had strayed because of a navigational error.

Suggesting that violations were not confined to one side, the United States charged in May, 1963, that two Soviet reconnaissance craft had flown over Kuskokwim Bay, Alaska. This was denied by the Russians.

Mr. Lebedev's account was accompanied by a photograph showing a fur-hatted Soviet border guard with a rifle on Ratmanov Island. Little Diomede was visible in the distance.

The correspondent said that Eskimo residents of the American island hunted seals in the winter on the ice of the strait separating the two islands. He mentioned only a settlement of frontier troops on the Soviet island, suggesting there was no civilian Eskimo population.

The New York Times Nov. 5, 1964

A Soviet newspaper says United States planes have crossed the frontier in the Bering Strait (cross).

### Pentagon Denies Charge

The New York Times

WASHINGTON, Nov. 4—The Defense Department denied today any knowledge of attempts by American planes, to violate Siberian territory. A spokesman added, however, that while there was never any deliberate attempt to violate the frontier, it was conceivable that planes taking off from Kodiak and Adak Islands might inadvertently stray over the boundary.

# *U. S. Told of Soviet Oceanography Lead*

ANNAPOLIS, Md., Aug. 14 (AP)—The Russians are spending more time and money studying their northern sea route than the United States is on its whole oceanographic program, an American steamship company official has warned.

Frank A. Nemec, executive vice president of Lykes Bros. Steamship Company, told an oceanographic conference yesterday that "our efforts in marine research have been halting, disjointed and hampered, in government, by budgetary shortages."

The conference, sponsored by the State of Maryland, brought together about 300 representatives of institutions throughout the nation interested in the study and development of the ocean and its resources.

Mr. Nemec said the United States was not carrying on the type of program needed to support its basic marine interests. He recommended that a Federal oceanographic institute or commission be established to coordinate all of the nation's activities in marine and fisheries research.

Such an agency, he said, could process data gathered by various private and government groups, coordinate planning efforts and aid communication within this country and with oceanographic groups in other countries.

# ARCTIC SHIPS END RUSSIANS' SEASON

## 13% Increase in Cargo Laid to Use of Icebreakers

The arrival of the atomic-powered icebreaker Lenin at the northern Russian port of Murmansk Nov. 13 marked the end of the Arctic navigation season, Tass, the official Soviet news agency, reported from Moscow.

Despite unfavorable weather conditions, the Soviet Arctic fleet was able to carry 13 per cent more cargo than in the previous season, Tass said. However, no 1963 cargo figures were given.

In addition to the 440-foot, 44,000-horsepower Lenin, the two modern diesel-powered icebreakers Moskva and Leningrad were employed. These 400-foot vessels are sisterships and were built in Finland. At times the three ships had to team up to smash through 6.5-foot thick ice in the western Arctic, the account said.

Among highlights of the navigation season were trial voyages via the Bering Strait to Japan by the 406-foot motorships Amurskles and Berezinales, each of which carried 9,000 tons of timber just before the end of the season. The two ships sailed from the inland Siberian port of Igarka.

Tass quoted the Soviet Ministry of Merchant Marine as saying that the new shipping line between the Yenisei River port of Igarka and Japan was viewed "as a very promising one."

## 'Heat Wave'

MOSCOW, Aug. 19 (UPI) —It has been a long, hot summer at the North Pole, relatively speaking. Tass reported Tuesday that temperatures have been "well above zero" in the Arctic basin.

# ICE DELAYS SHIPS BOUND FOR THULE

### Greenland Base Is Awaiting 7,000 Tons of Supplies

July 18

The northernmost United States defense base, on the Greenland icecap at Thule, is awaiting the arrival of the Greenville Victory with 7,000 tons of badly needed supplies.

Progress of the merchant ship, operated by the Navy's Military Sea Transportation Service, has been slow in recent days despite the fact that two icebreakers are running interference. They are the Coast Guard's Westwind and the Navy's Atka.

At last reports, the Greenville Victory was still 200 miles from her destination. The icebreakers were driving through ice up to 4 feet thick, with ridges 15 feet high.

The progress of the three vessels was also slowed by bad weather last week. On Wednesday the Westwind informed the M. S. T. S. Atlantic area command here that she was encountering heavy, driving snow and a temperature of 32 degrees. In four days, Capt. R. F. Barber of the Coast Guard said, the three ships traveled only 35 miles.

However, Captain Barber sent word that the ice conditions, the worst in many years, were bound to get better soon. "They can't get any worse," he said.

The Greenville Victory and the two icebreakers are part of Task Force 6, assigned to the annual M. S. T. S. mission to resupply northern bases.

Aug. 23

The Coast Guard cutter Westwind and the U. S. S. Atka, have been keeping a sea lane clear for vessels of the Military Sea Transportation Service that annually resupply the base.

The yearly fight against the ice starts early in July and sea lanes must be ice-free at least until the end of September when the winter season begins. After the Arctic winter sets supplies can not be shipped in by sea. When the resupply of the base begins the warm summer sun usually has reduced the ice accumulation to a point where the ice breakers can cut through easily.

This year, both 16-knot vessels, which have welded double hulls with exceptionally heavy 1⅝-inch-thick steel plating, have had a tough time.

The ships, which feature unusual ice-crushing notches on the bottom of their prows, have been cutting through some ice fields as thick as four to six feet. They were built to slice through ice floes of six to nine feet.

One of the season's most trying assignments started July 8 when the vessels brought the MSTS supply ship Greenville Victory through 250 miles of ice that averaged four feet in thickness. Along the route ice floes sometimes overlapped and collided with each other doubling up to as much as 15 feet. Fog, heavy snow and Arctic winds hampered the operation so much that none of the three ships could move until the wind shifted. It took nine days for the vessels to get through.

The Westwind, is commanded by Capt. R. F. Barber and the Atka Commander W. J. Martin. According to Arctic experts the ships have been fighting a heavy accumulation of ice because of a possible shifting of the Greenland Current, which helps melt the ice, and the exceptionally cold winter and spring weather last year.

On the other side of the Arctic the Coast Guard cutter Northwind is making its third year oceanographic study of the Chukchi Sea bordering Siberia.

# *Westwind Back From Icy North*

## *Sun Greets Cutter After Six Months in Stormy Arctic*

The New York Times

After five months in the Arctic, fighting fogs, storms and the thickest, toughest ice she has ever encountered, the Coast Guard icebreaker Westwind returned to her home port Nov. 10 under a bright sun and gentle breezes.

The 6,000-ton vessel received a whistle-and-siren welcome as she steamed up the bay. A Coast Guard tug and six small patrol craft escorted her up the East River to the Brooklyn Navy Yard. The fireboat Wilkes followed, throwing a plume of water 75 feet into the air. At the Navy Yard the band struck up the Coast Guard march, "Semper Paratus."

"It's the best day we've had since we left," said Aerographer's Mate Richard Lombardi of the Bronx just before he raced down the gangplank to embrace his wife, Elaine. They were married only four months before the Westwind sailed, when Mr. Lombardi had what looked like a steady shore berth at district headquarters here.

On the dock, Apprentice Seaman Philip Renzi asked his wife Claudia, "How do you like my beard?"

She kissed him and said, "It's terrible."

"Well, it was fun growing it, but it comes off tonight," he replied.

In his cabin, the skipper, Capt. Robert F. Barber, said the ship had had to grind through ice up to 15 feet thick for days at a time as it escorted supply ships to the Air Force base at Thule in northern Greenland.

"We proved one thing," he said. "After 1964 we know we can get through any year."

The Westwind, which is 20 years old, began its career on loan to the Soviet Union in World War II. It has been making the annual supply run of nearly 10,000 miles for a decade.

This year she sailed from New York on June 9 and at Goose Bay, Labrador, joined two Navy icebreakers and 10 cargo vessels bound for Thule. Led by the Westwind, the first of the supply ships reached the base on July 17.

Later the Westwind helped free a small Danish freighter that had been trapped in the ice of Melville Bay. She then made an emergency trip with food to a small Eskimo village whose inhabitants were in danger of starvation.

Now, in the next five or six weeks, the ship will be overhauled at the Navy Yard while members of her crew are on leave. Then she will go on standby duty for icebreaking in the Hudson River if the winter is severe.

U. S. Coast Guard

**U.S. Coast Guard's Westwind breaking the ice for the Navy's Greenville Victory last July in Melville Bay.**

Eskimos in the Canadian Arctic are so fond of dogs that they give their pets the names of deceased family members.

# NEW DEVICE TESTS THICKNESS OF ICE

## A Form of Radar, It Works From Moving Vehicle

The New York Times

THULE, Greenland, July 17 —After several years of experimentation, a method has been developed for continuous measurement of ice thickness from a moving vehicle that may revolutionize exploration of glaciers and ice sheets.

The device, a form of radar, can produce a profile of ice depth much as a ship's echo-sounder records water depth on a roll of paper.

Some of those who have worked with the equipment believe it will ultimately be possible to chart the land beneath any ice sheet from an airplane. This would enormously accelerate study of the ice-buried Antarctic Continent as well as the ice of Greenland and the world's glaciers.

Two of the devices, one British and one American, are being tested jointly on the Greenland ice sheet. They are being carried by tracked vehicles, and have obtained echoes off the rock bottom through about a mile of ice. This is probably near the limit of the present equipment.

The most reliable method now used for plumbing ice depths is seismic sounding. This is a slow and laborious process that involves the digging of a hole, the burial of an explosive charge, the laying out of geophones to receive the explosion echoes and the firing of the charge.

Another method is to record extremely slight changes in gravity. The deeper the ice, the lower the gravity readings. An observation can be made in a few minutes. However, variations in density deep within the earth also cause fluctuations in gravity. Hence, the record is not always reliable as an indication of ice thickness and it is preferable, at intervals of 10 or 20 miles, to tie it down by means of seismic soundings.

Glaciologists who have seen what the ice-sounding radar can do are highly enthusiastic but believe that at least in its current stage of development it too will have to be checked, at intervals, by explosion soundings.

Development of such radar is in part an outcome of the discovery that aircraft radar altimeters operating on frequencies of 400 megacycles or less, were not "seeing" the ice beneath them. This was observed, in particular, on flights over Greenland and Antarctica during the International Geophysical Year of 1957-58. Instead of bouncing off the ice surface, the radiowaves were penetrating it.

Tests on the surface of the ice confirmed that the waves would pass through such ice and warnings were issued to pilots not to rely on altimeters using these wave lengths when flying over ice. It is at least possible that some unexplained accidents were a result of this phenomenon.

The American system has been produced by the Army Signal Research and Development Laboratories at Fort Monmouth, N. J. under the guidance of Amory H. Waite, a veteran of Antarctic expeditions for 30 years. The British unit has in large measure been produced by Dr. Stanley Evans of the Scott Polar Research Institute at Cambridge, England.

Both have been tested in the Antarctic. The current trials being carried out at the invitation of the American group are to evaluate the relative merits of the two systems.

Since June 28 the two devices have been hauled 138 miles from the edge of the ice sheet near here eastward to Camp Century, where the ice is nearly 5,000 feet thick. They are now being carried on side trips from that under-ice encampmant.

The American system is more powerful, but the British system has been more explicitly designed for continuous recording along the trail. The current operations should lead to improvements in both models.

Until now the ice-depth radar has been viewed with skepticism by many polar specialists, who felt radio waves would not penetrate deep enough to be of much value. The current tests, made at locations where depths had already been determined by seismic means, have shown the accuracy and feasibility of the system.

One reason for the skepticism has been the belief that because of heat flowing up from deep in the earth, a large ice sheet becomes warmer close to the bottom. Such "warm" ice would absorb radio waves far more extensively than ice whose temperature is well below freezing.

The fact that radio waves do penetrate to the bottom means that they may now be used to assess deep ice temperatures. This, in turn, should help resolve one of the basic problems in glacier studies: Are they frozen to the rocks beneath them or are they soft enough, on the bottom, to flow over the rocks, smoothly?

Some believe there is slush beneath the heavy ice sheets. The answer to this question will indicate to what heights an ice sheet, like that which covered the northern United States, might reach. If its bottom was slushy, it would flow faster to the sea and the height would be less than if it is hard and frozen to the bottom.

# *U.S. Tests Rockets in Greenland For Clearing Fog Over Airstrip*

By WALTER SULLIVAN
The New York Times

Rockets that cost only $3 a shot are being tested on the Greenland ice sheet as a means of clearing fog over an aircraft runway.

Known as "crickets," they carry dry ice or a special chemical to encourage the fog to form rain drops. The rockets are cold—that is, they are driven by compressed carbon dioxide instead of by the burning of fuel. For this reason they are particularly safe and reliable.

According to James R. Hicks, who is in charge of the project for the Army, the crickets can lift a parachuted payload to a height of 4,500 feet. One such payload can clear an area one-eighth of a mile in radius, he said in a recent interview in Greenland.

Mr. Hicks is with the Army's Cold Regions Research and Engineering Laboratory in Hanover, N. H.

He said that a special problem encountered by the Army in its operations on the ice cap that crowns most of Greenland is a supercooled fog that hugs the surface, imperiling incoming planes. The procedure that he and his men have used with some success uses the wind speed as its timetable.

The rocket-launching team travels upwind from the landing site a distance equal to that traversed by the wind in a half hour. Then, a half hour before the plane is due, the first rocket is fired. Thus the patch of air cleared by this shot arrives at the landing strip at the same time as the plane.

When the air into which the first rocket was fired has moved a quarter-mile toward the strip, a second shot is sent aloft. In a 10-knot wind the men will launch 40 rockets. The rockets cost $35 each, but they are usually recovered and reloaded at a cost of $3.

Another model, two feet long and two inches in diameter, is to be tested. To give it an extra boost, it is shot out of a 10-foot tube by a gaseous charge in the tube. The rocket fins spread into position after leaving the tube.

Mr. Hicks believes rockets are probably the only solution because the fog usually occurs when there is a temperature inversion. In such a situation the air becomes warmer with increasing altitude, the reverse of the normal situation. Normally the rising of warm air carries smoke and other material upward.

Chemical generators on the ground have been used in some fog-dispersal experiments, but they depend on this rising warm air. When there is an inversion the warm air is already on top and there is no such circulation. It is this effect that traps smog over a city or holds a fog close to the ground.

Mr. Hicks said that the chemicals now in use for fog removal are inadequate and that the ideal substance has yet to be discovered.

Several nations have been experimenting with small rockets for weather control. Both the Italians and Russians, in attempts to prevent hailstorms from ruining vineyards or other crops, have fired rockets into approaching storm clouds.

## 400-Pound Polar Bear Gives Birth to 11-Ounce Cub

QUEBEC (Canadian Press) —A 400-pound mother gave birth recently to an offspring weighing about 11 ounces.

But since the mother is a polar bear the weight contrast is not considered outrageous.

What is rare about the birth, which took place in the Quebec City Zoo, is that it occurred at all.

Dr. J. A. Brassard, director of the zoo, says only five births involving captive polar bears have taken place, and these in the heated cages of United States zoos.

The birth here took place outdoors, with a pile of straw the only source of warmth. The mother has been at the zoo eight years.

## Tiny Polar Bear in Canada Dies Two Days After Birth

**QUEBEC (Canadian Press) —A tiny polar bear born at the zoo in suburban Charlesbourg, died recently at the age of two days.**

**One of the few polar bears born in captivity, the infant male weighed under a pound at birth and was 11 inches long. The mother, who has been at the zoo for seven or eight years, weighed 400 pounds and the father 650.**

**"It's too bad," said Dr. J. A. Brassard, director of the zoo. "We'll try again next year though."**

**When asked what caused the death, Dr. Brassard said "it could have been the cold, it could have been the feeding, it could have been the noise of people who came to see him."**

# NEW ICE VEHICLES CUSHIONED BY AIR

## Army Tests Ground Effect Machines in Greenland

By WALTER SULLIVAN

July 24

A vehicle that skims serenely over hummocks of ice and lethal crevasses is being tested on the Greenland ice sheet in the hope that it will lead to development of the ideal means of polar travel.

The device, a "ground effect machine," rides on a cushion of air. It is known as the "Carabao," for the water buffalo of the Orient, since it is made by the Bell Aerosystems Company of Buffalo N. Y., and was designed for travel over water.

The two-man vehicle is being tested by Army specialists to see if it can be modified into the equivalent of a jeep.

They are trying to find ways to overcome several drawbacks. One is the difficulty of slowing such vehicles as they go down hill. Because they are not in direct contact with the ground, they are hard to stop.

One experimental solution is to equip the vehicle with a brake like that used on bobsleds. A levered device bites into the ice when needed.

Another problem is the tendency of such vehicles to move sideways in a cross-wind. Among the schemes for countering this is the installation of wheels or disks, like those on a disk harrow, that can be brought into contact with the surface when necessary, serving the role of a keel.

The development of ground effect machines for use in the polar regions is a dream of long standing. The Canadians have been particularly interested in such vehicles. If a practical and economic model could be produced, it would revolutionize transport in the North. A large portion of Canada is covered with soggy muskeg and tundra. The river systems provide ready-made highways if air-cushioned craft could make use of them.

There are tracked vehicles, like the Nodwell, that can creep tortuously over the muskeg, leaving a trail of muck and debris behind them. However, they are slow, even on the open road.

The Carabao and other such vehicles can skim over a polar landscape at 40 miles an hour or more. In a demonstration when the Potomac River near Washington, D. C., was ice-clogged, the Bell machine was able to maintain such speeds, even over tilted ice floes that rose two or three feet above the river.

One of the objections to ground effect vehicles is that they burn a considerable amount of fuel just to keep themselves airborne. The Bell model, for example, is sustained by the blast of three down-blowing fans and is propelled horizontally by an aircraft engine.

The air cushion is maintained with the aid of flexible skirts, that brush the ground. The need for fuel to keep it off the surface is compensated for, to some extent, by the lack of friction obstructing horizontal motion.

The Army's need for the "ideal" polar vehicle was evident on a tour of Arctic research facilities, carried out last week by a group of polar specialists at the Army's invitation. What are required are vehicles that can carry men and supplies across muskeg, over an ice sheet or down rivers, yet can still roll along an open road at a reasonable pace.

The Weasel, a tracked vehicle developed during World War II as the amphibious equivalent of the jeep, proved a boon to polar travelers.

# 2 U.S. SHIPS REPAY DEBT TO ESKIMOS

## Icebreakers Help Village That Aided Whalers

Oct. 18

A favor once granted among seafaring men is never forgotten and usually returned no matter how much time has elapsed.

Late last month the crews of two icebreakers, the Coast Guard's Westwind and the Navy's Atka repaid a debt of gratitude to a band of West Greenland Eskimos, residents of the small village of Savigssivik on Meteorite Island in Melville Bay.

In the early 19th century the same Eskimos fed and sheltered the crews of 10 New Bedford whalers after their ships were crushed by ice and sank in the bay.

The crews had just enough food to last for a 40-mile trek across the ice to the tiny village, where they were picked up the following summer by rescue ships.

Details of how the favor was returned more than a hundred years later were made public here last week here by the Coast Guard.

Ice again was the culprit and it had made it impossible in July and August for a small Danish supply ship to call at the village to drop off an entire year's ration of coal, kerosene, medicines and food.

When the 241-foot Danish motorship Elfy North was entrapped in the ice, the Westwind bulled her way to her side. But the Westwind found that the ice was so heavy it could not pull the merchant ship back into open water.

Since the Elfy North was in no immediate danger the Westwind supplied her with 6,000 gallons of fresh water and took off three scientists and one injured seamen who were returned to the United States bas at Thule, Greenland.

Four days later, the Atka had some free time in between escorting American supply ships in and out of Thule and managed to free the Elfy North and escort her back to Thule.

That still left the problem of getting the badly needed supplies to Savigssivik. The cargo was transferred to a larger and more powerful Danish ship, the 290-foot Nanok S, which got within 50 miles of the village when she was stopped dead by heavy ice.

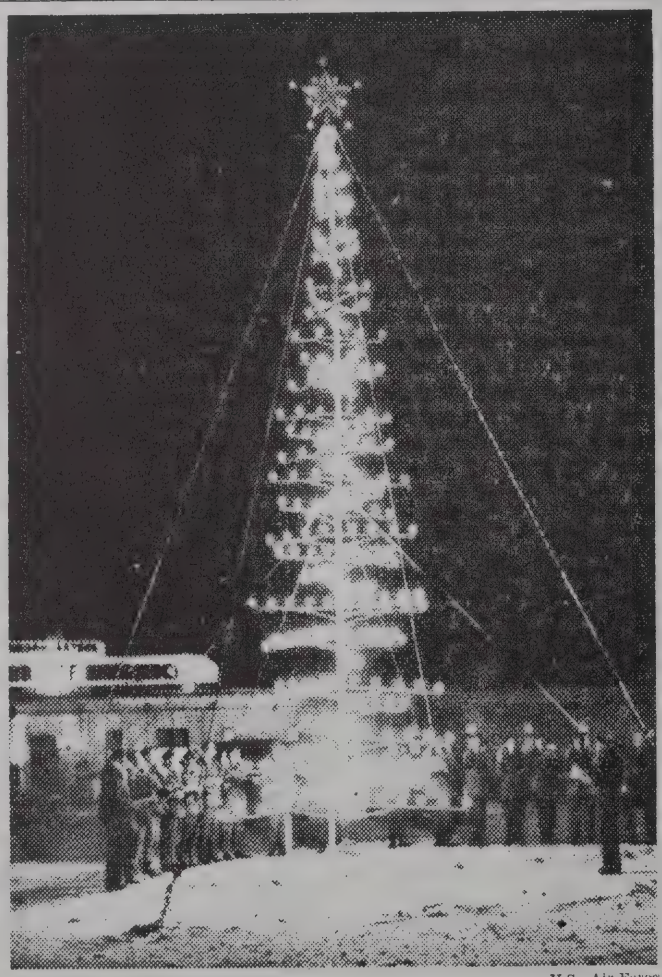
By this time, late September, the supply situation at the village was so desperate that Danish authorities considered air drop of supplies, and with the alternative of evacuating 65 Eskimos.

The Danish Government appealed to the Navy's Military Sea Transportation Service, under whose jurisdiction the two icebreakers were operating as part of the annual missions of supplying northern bases.

The two icebreakers smashed their way through 50 miles of heavy Melville Bay ice and escorted the Nanok S. to a point within 500 yards of the shore.

Everyone, sailors from the two icebreakers, Eskimos and their dog sleds and the crew of the merchantman pitched in and within 24 hours, 50 tons of general cargo and food, 75 tons of bagged coal and 150 drums of kerosene had been taken ashore.

The account of the mission furnished by the crew of the Westwind noted that "never before in the history of Greenland had such a cargo been discharged so quickly over the ice."



U.S. Air Force

**WHERE THERE'S A WILL THERE'S A TREE: The choral group of Air Defense Wing at Thule, northernmost U.S. defense base, sings carols around an improvised tree. Greenland may be near Santa Claus, but greenery is scarce.**

### Yukon Tourism Increases

DAWSON CITY, Yukon Territory (Canadian Press)—Businessmen here, 1,150 miles northwest of Edmonton, say 1964 has shown the biggest tourist increase ever. Canadian customs processed more than 1,600 foreign cars during June and July.

# NORTHERN PILOTS HIGHLY RESPECTED

## Planes Play Important Role in Arctic Survival

MOULD BAY, Northwest Territories (Canadian Press)— There is a special kind of respect for pilots and aircraft in the frozen northland where planes are a major instrument of survival.

Pilots such as Bert Burry have earned it with their ability to set down a plane on rough, postage-stamp-size landing strips, their capacity for working long, tedious hours and their record of few mistakes.

"Up here, your first mistake could easily be your last," says Mr. Burry, owner of McMurray Air Services, Ltd., and dean of the fliers attached to the Federal Government's polar continental shelf project, a scientific operation to explore and map the arctic Archipelago.

In six years of flying on the project, McMurray planes have logged more than 40,000 miles with the loss of one craft, a single-engine Otter that went through the ice in 1961. No one was injured.

Mr. Burry says 99 per cent of flying accidents result from errors by pilots and this is one of the reasons McMurray plays it close in the North.

"Sometimes we hate to say no to the scientists but they are depending on us and their lives are our responsibility," says George Burry, Bert's 34-year-old son who is in charge of the operation in the Arctic this year. "If there is any doubt, we usually say no."

Rotting ice — cause of the lost McMurray craft — is just one of the hazards faced by pilots. Fog, blizzards and white-outs (in which the ground and sky seem to merge into a great white mass) can make flying difficult.

"We all sweat occasionally," says the older Mr. Burry, who now flies only when it is absolutely necessary, "especially

George Burry, who has been flying in the Arctic for five seasons, describes the experience as "hours of boredom and moments of anxiety."

Few other places in the world can match the Arctic for sheer emptiness — rock and snow — when ice starts to form on the and makes it difficult for pilots to pick out landmarks.

Serving field camps fanning out from the home base at Mould Bay, 1,800 miles north of Edmonton, is a challenge. There are no landing strips and the pilot must judge from the air the depth of snow banks that have built up since his last visit.

The New York Times Dec. 3, 1964

CROSS marks ore-find site

# ARCTIC DEPOSITS OF ORE CONFIRMED

## Deposit on Baffin Island Is Rich in Content of Iron

Test drilling has confirmed the existence of a vast deposit of rich iron ore on Baffin Island in the Canadian Arctic.

In a telephone interview, Murray Watts of Toronto, who discovered the deposit in 1962, said that an independent consultant had appraised the deposit at 116 million tons of 68 to 69 per cent iron content, "which compares with the best ores in the world."

Mr. Watts emphasized that there were problems involved in mining and shipping the ore because of its location. Baffin Island is the largest and most easterly part of the Canadian Arctic Archipelago. Its population consists chiefly of some 2,200 Eskimos and is closed to shipping 10 months of the year.

But Mr. Watts noted that the 116 million-ton figure involved only one part of one deposit among four in two 800-square-mile concessions owned by his company, Baffinland Iron Mines, Ltd. He estimated the iron range on Baffin Island at 45 miles long.

Other estimates of the deposit from mining sources have ranged from 125 million to 180 million tons. Mr. Watts said that drilling so far had extended to just 5,000 feet of 8,000 that are to be explored and said the potential production rate was now put at about 2.5 million tons a year because of transportation and shipping problems, a reserve that would last well over 20 years. But, he said, details about production "are very speculative now."

Mr. Watts said the potential big market for the Baffin ore, which needs no beneficiation and can be shipped directly to blast furnaces, was Europe. He indicated that the American industry was too heavily committed to upgrading low-grade ore through pelletization to offer a large market for the Baffin ore.

Mr. Watts, a mining engineer, who "has stayed with the prospecting end," made the discovery in 1962. He has been exploring in Baffin Island since 1931, when he went exploring there at age 21.

In 1955 he discovered a nickel belt and 1957 an asbestos deposit, which later was sold by a company he was with for $14 million.

Mr. Watts is president of Baffinland Iron Ore Mines, which is controlled by the Anglo-American Corporation of South Africa, Madsen Red Lake Mines, Ltd., Advance Red Lake Mines, the Murray Watts Mining Group, Falconbridge Nickel Mines, Ltd., the Consolidated Mining and Smelting Company of Canada, the Asbestos Corporation and Westfield Minerals, Ltd.

# NEW SHIFT NOTED IN MAGNETIC POLE

## Movement Put at 20 Miles North, 4 East, in 2 Years

OTTAWA (Canadian Press) — Canadian scientists once again have caught up with the wandering Magnetic North Pole.

They have found that in the last two years the pole has moved about 20 miles farther north and about four miles east to a new position at the southern end of Bathurst Island, approximately 1,800 miles north of Winnipeg.

The new position of the pole was determined by ground survey parties from the geomagnetic division of the observatories branch of the Department of Mines and Technical Surveys.

Edward Dawson, scientific officer with the division, said in an interview recently that the position of the pole now was 75.5 degrees north and 100.8 degrees west.

"The pole now is moving about five miles a year north and one mile a year east," Mr. Dawson said.

The position of the pole was first recorded in 1831. At that time it was located off the coast of Boothia Peninsula north of King William Island.

By 1904 it had moved northeast about 25 miles. During the next 44 years it moved about 250 miles to a point in Barrow Strait north of Prince of Wales Island.

From 1948 to 1962 the pole moved about 80 miles northeast to a point near Peddie Bay at the southern end of Bathurst Island. It now is 20 miles farther north and four miles east of this position.

The pole's new position will be used in the production of new magnetic charts of Canada for accurate navigation. These charts show the difference between magnetic north and true north. With the charts a navigator knows how far his magnetic north reading is off true north.

## Explorer's Cache of Food From 1852 Found in Arctic

CALGARY, Alberta (Canadian Press)—A 112-year-old food cache hidden in the Arctic's Resolute Bay region by Sir Edward Belcher, the explorer, was discovered this summer by geologists employed by a Calgary oil company.

The cache was uncovered by a team from Socony Mobil Oil of Canada, Ltd., on a beach 1,700 miles north of here and 110 miles north of Resolute.

Sir Edward made the cache in 1852 while commanding an expedition in search of Sir John Franklin, discoverer of the Northwest Passage, who was lost in 1845.

Ken Drummond, chief of the 10-man party, said the cache was discovered July 23 when the party found a cairn about 500 feet above sea level a mile from the cache.

Following a duplicate set of directions left by an earlier party, the mobile crew found the cache after a search by helicopter. The cache contained wooden barrels, presumed to have held rum, tins of meat, which had rotted, and barrels of hard tack.

The food and containers will be sent to the Canadian Public Archives in Ottawa.

## Change in Diet Said to Harm Indian and Eskimo Eyesight

MONTREAL (Canadian Press) — Dr. Elizabeth Cass, an eye specialist with the federal Department of Health and Welfare at Fort Smith, said recently that Indians and Eskimos in the Northwest Territories tended to develop eye disease when they ate white men's foods.

Dr. Cass was addressing the American Congress of Ophthalmology, a gathering of eye specialists.

Later, in an interview, Dr. Cass said she did not know why Indians developed shortsightedness with the change of diet. She has asked nutrution experts to investigate.

Dr. Cass said tuberculosis of the eye was another great problem in treating the eyes of the Eskimos and Indians to whom she has ministered since 1958.

# Road to Tap Canadian North

*The Christian Science Monitor*

**Red Deer, Alta.**

Construction of a 1,040-mile winter road through the swampy Northwest Territories is to be launched at the middle of November to help petroleum companies develop natural resources in Canada's far northland.

The road, suitable for heavy trucking and automobile traffic, is to be built from Fort Providence on the Mackenzie Highway near Great Slave Lake to Inuvik on the Mackenzie River delta and only 50 miles from the Arctic Ocean. It will be linked with Alberta's vast network of modern highways.

Besides helping the world's petroleum firms search out more of the riches in the empty wilderness territory, the road will open the way for a 2,200-mile trip from Alberta's oil capital of Calgary to Inuvik—a journey with breath-taking scenery and the hazard of running out of gasoline in temperatures of under 60 below zero.

Calgary Exploration Services, Ltd., will construct the road during the winter, when the virtually endless swamps and muskeg are frozen solidly. The company plans to use hundreds of thousands of dollars worth of special equipment on the wilderness project.

Because of the terrain through which the road is to be built, the project is expected to produce many unique construction problems. When in service, the road will be maintained with snow being used for surfacing in the same manner that gravel is used on some rural roads in more southerly zones.

The winter road, on which which about 20 major and 10 small petroleum firms will pay a toll on traffic into Mackenzie River basin exploration sites, will be open for use between Dec. 15 and May 15.

Tentative plans of Calgary Exploration are to keep the road open for three years. It may then be improved if this is warranted by developments. However, it will serve a vital purpose even during those relatively few years.

Operations of petroleum companies and their heavy equipment in that muskeg-covered region almost come to a halt during the summers, when the muskeg is too fluid to support the weight of most vehicles and men. These operations are in full swing during the midwinter months from December through March, when most of the muskegs are frozen solid and can be traversed.

The road will greatly facilitate these operations, which must be compacted largely into the winter season. And it will substantially reduce costs of moving equipment and supplies.

Calgary Exploration's idea for the road was born in a right of way the firm had been contracted to clear last year for a telephone line for the federal government's Canadian National Telecommunications system through the wilderness.

Incentive written into petroleum-exploration-work permits issued by the Canadian Government made the road idea an appealing proposition. The road will enable oil companies to expand their drilling operations on their far northland acreages.

Most of the areas through which the route for the road passes have been virtually shut off from civilization and have only a few tiny Indian settlements. However, encouraging showings of natural gas and crude oil have been discovered in some areas.

Winding through mountains and foothills, past vast timber stands, over frozen muskeg and temporary log bridges, the road will expose a wide variety of fur-bearing animals, hot-water springs in icy surroundings, and historical settlements.

North from Fort Providence on the west end of Great Slave Lake, the inhabited communities along the route are Fort Simpson, Wrigley, Fort Norman, the oil-producing center of Norman Wells, Fort Good Hope, and Inuvik—all small but with a history rich in fur trading.

While the road is under construction—and then throughout the winters when it is in operation—subzero temperatures are expected to be the rule. And the formation of mountainous snowdrifts is virtually certain.

During the early winter, the period of daylight in the region is confined to 11 a.m. until around 3 p.m., increasing as winter lengthens.

Calgary Exploration men and equipment will assist petroleum-company crews on major hauling jobs on the road during its operating months each winter. Five complete road patrols with radio communication and air patrols will scout the route for vehicles in trouble.

Thirteen caches, containing food, fuel, and other necessities, will be established along the route.

## Dentist Says Change in Diet Is Giving Eskimos Cavities

EDMONTON, Alberta (AP)—Eskimos apparently once needed no dentists.

Now they get cavities like everyone else. Dr. C. H. Carley, a senior government dental officer, said the Eskimo once existed on a high-protein, low-carbohydrate diet. His teeth rarely decayed.

But now many Eskimos eat the same refined high-carbohydrate foods as other Canadians.

Dr. Carley is one of six dentists employed by the Health and Welfare Department to work in northern Alberta, the Yukon and the Mackenzie district of the Northwest Territories.

## First Lutheran Church To Be Built in the Yukon

WHITEHORSE, Yukon (Religious News Service) — The first Lutheran church in the Yukon be built before the end of 1964.

Trinity Lutheran church here plans to construct a $116,000 building. The congregation, with 117 baptized members, was organized about three years ago under the direction of the Lutheran Church in America's Board of American Missions. It has since worshipped in temporary quarters.

The Rev. Modris K. Gulbis, pastor, said construction was expected to take 18 to 20 weeks. "This will be the first Lutheran church building in Canada's northland above the 60th parallel," he said.

## CANADA SEEKING YUKON-SEA LINK

### Retreat of Glacier Found to Leave Trans-Alaska Inlet

VANCOUVER, B. C. (Canadian Press)—The Province, a newspaper here, says it has been established definitely that a salt water inlet bisects the Alaskan Panhandle and extends into Canada.

If the land lying at the head of the inlet can be developed, the newspapers says, Canada would have a valuable salt-water port and the prospect of a supply route into northern British Columbia and the Yukon.

It quotes Leo Proctor of Whitehorse, a lumberman and road builder who flew over Tarr Inlet in the extreme northwest corner of British Columbia.

Mr Proctor found that the retreat of the Grand Pacific and Melburn glaciers had left three miles of the inlet in Canadian territory.

He was acting in behalf of the Yukon Research and Development Institute, which is concerned with development of an all-Canadian shipping route out of the North.

At present goods moving to and from the Yukon and northern British Columbia must go by truck over the Alaska Highway or by rail to the American port of Skagway.

Canada's most northerly West Coast seaport is Prince Rupert, 500 miles northwest of Vancouver. Tarr Inlet is almost 1,000 miles north of Vancouver.

Mr. Proctor is quoted as saying he is convinced an all-weather road could be built into the head of the inlet.

His party found that the glaciers dropped from an altitude of 2,500 feet to sea level over eight miles and were crumbling in many places at the seaward end.

Aerial photographs of the area have not been taken for nine years and reports in the office of the Surveyor-General of British Columbia indicate that the glaciers advance and retreat irregularly.

## *FIRST TRAINS ENTER CANADA'S FAR NORTH*

WASHINGTON — The sound of trains is echoing for the first time across Canada's remote subarctic realm.

The Great Slave Lake Roilway will soon link Roma in northern Alberta to Great Slave Lake in the Mackenzie district of the Northwest Territories.

Scheduled for completion in 1965, the railway is the first in Canadian history to reach northward into the territories, the National Geographic Society says.

The main purpose of the 430-mile rail line is to tap what may be the world's richest deposits of lead and zinc ore on the south side of Great Slave Lake. Geologists estimate reserves at Pine Point alone at more than 50 million tons.

Miners at Pine Point have been preparing several years for the day when the train arrives. Initial stripping has been xmade for an open-pit mine, water and sewer lines have been installed, milling facilities and a modern townsite have been built. About 50 homes, bachelor bunkhouses and a community hall stand in the praire-flat desolation of scrub pine, rock and muskeg.

Power will be supplied by an 18,000-kilowatt hydroelectric plant at Twin Falls, 150 miles east of themine site.

Although the immediate purpose of the Great Slave Lake Railway is to provide cheap access to important mineral deposits, it will olso serve as long term stimulus to forestry and farming in northern Alberta and Mackenzie.

# ESKIMO TRAPPER RECALLS FEARS

## Young Canadian Calls Tales of Intrepidity Myths

WINNIPEG, Man. (Canadian Press) — William Noah, a 21-year-old Eskimo trapper, recalls his boyhood in a primitive village beside the Back River, 1,100 miles north of Winnipeg, as scattered with events that filled him with fear.

Mr. Noah now lives at Banker Lake, 130 miles south of his childhood home. He was in Winnipeg during the summer learning carpentry. His own experience refutes the popular myth that a boy born and raised in the wilderness is fearless by nature and a hunter by instinct.

He said fear was natural to him as eating caribou meat, sleeping in igloss and trapping white foxes. The untimely death of his father brought him face to face with fear early in life, because, while still aboy, he had to tackle the man-sized job of trapping.

His first white fox was alive when he found it in his trap. He was 12.

"I was afraid," he said recently, "I did not know how to kill it. I wanted to have nothing to do with it."

He knew that older trappers could put a foit on a fox's shoulder to finish it off, but he did not know how — and to shoot it would spoil the pelt. So he killed it with the butt of his rifle.

As he spoke he occasionally chuckled at things that once frightened him. When he went hunting with his father, for example, he was frightened when ptarmigan, a grouse common in the North, flushed noisily out in the darkness.

But there were other fears that took time to overcome. When trapping alone he sometimes returned to the igloo without reaching his traps — "I was afraid there might be a wolf."

Once after supper he went with a friend to check trap lines and they got caught in a blizzard. With a snow knife they built an igloo "just big enough for two."

The sky was blue when they crawled out the next morning, their clothes frozen stiff. They climbed a hill to see where they were and spotted the Noah home.

"My sister was waiting for us outside," he recalled. "It was early in the morning, but nobody was sleeping. I didn't understand why they were crying. I didn't understand they were crying because they were happy to see us."

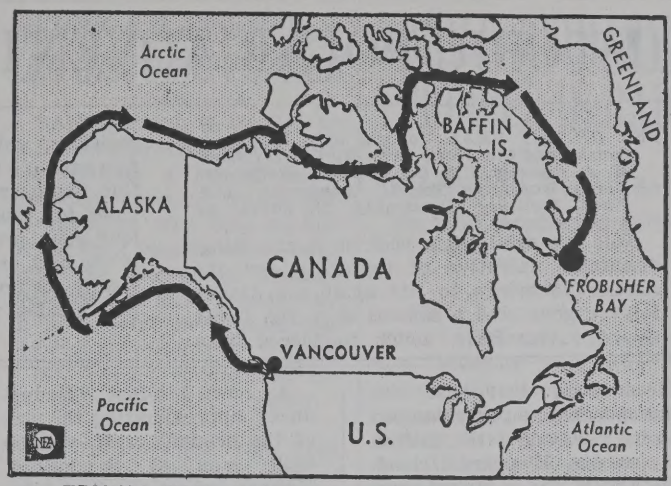
Sickness hit the back River village of four to six families in the next year and the boy was sent to Baker Lake. There he met fear again. He was afraid of the teacher and of other boys. Eventually he reached the Grade 5 level and learned some English.

Last year the Northern Affairs Department brought him and 10 other Eskimos here to take a basic carpentry course at the Manitoba Institute of Technology. This summer was the young man's second in the course, and he made a chair and stool to take home to his mother.

Already Mr. Noah has helped build a community hall at Baker Lake. And although he's not sure what he will do in future he may continue with carpentry.

He says that, young as he was, he had started to become a "good" trapper, and now misses hunting and fishing. He may do some trapping out of Baker Lake. But he left the impression that he won't return to the life of a trapper in the wilds.

"It's a better life now."




**TRYING FOR A "FIRST" — Two men—old arctic hand Scott E. Alexander, RCAF (Ret.) and correspondent Gerald Waring have parlayed $100 of their own money and a dream into a many-thousand-dollar venture: an attempt to be the first to make a round-trip by boat through the Northwest Passage during the summer season. Donations of use of a 107-foot ocean-going yacht, money contributions and a complement of sailor-and-scientist volunteers has made the trip possible. Newsmap traces the route from Vancouver, B. C., to Frobisher Bay—the route they'll retrace in a race with the fleeting arctic summer. Purpose: to show that the Northwest Passage is feasible for commercial use during two or three months each summer.**

### New Name for Bering Patrol

WASHINGTON, Sept. 3 (AP) —The Bering Sea Patrol, started 97 years ago, is getting a new name—the Alaska Patrol. Announcing this Thursday, the Coast Guard said Bering Sea Patrol "is not sufficiently descriptive of the modern patrol's many law enforcement and conservation tasks." The patrol is conducted by a number of Coast Guard cutters, usually from April to November.

# *BREAD BAKED DAILY ON ARCTIC PROJECT*

MOULD BAY, Northwest Territories (Canadian Press)— Only one man stirs in this Arctic camp of 50 men at 5 A.M. He is Wilfred Pigeau.

Amid the snores of sleeping companions, he climbs into his clothes and takes a short hike to the camp kitchen, a frame building on a hillside.

The 50-year-old cook gathers the ingredients for baking bread and measures them into his oversized mixing bowl.

When the rest of the camp arrives for breakfast, they are greeted by the aroma of a dozen golden loaves cooling on a sideboard.

This is the early-morning routine seven days a week during the six months the Polar Continental Shelf Project is exploring the unknowns of the western Arctic each year.

"I used to have the bread shipped in but the flights were too irregular and the bread was too bulky to take up room in the planes," he said.

Mr. Pigeau spends a lot of time baking because "the more pastry the men eat, the less meat they want." That's important because shipping costs are more than the initial price of the meat.

Supplies are a regular cause of concern. Bulk foods, many dehydrated, are shipped in six months in advance but fresh meat and vegetables have to be airlifted from Uranium City, Sask., or Inuvik, Northwest Territories.

# ARTIST INSPIRES ESKIMOS TO DRAW

## Canadian Spurs Talents by Pencil and Paper Gifts

OTTAWA (Canadian Press) —Many of the Eskimos laughed when Terry Ryan stopped his dog team at remote hunting camps in northern Baffin Island and handed out drawing pencils and paper.

"They nearly fell over when they learned that I had come just to give them this pencil and paper, and the usual response was: 'I can't draw.'"

But Mr. Ryan, now finished with this phase of a special project, feels it was all worth while as an exercise in artistic stimulation among a talented people. He has about 500 drawings and sketches to show for it.

Mr. Ryan is a friendly 33-year-old bachelor born in Toronto who first went north in 1956 as a federal weather observer. For the last three years he has been secretary and art adviser to the West Baffin Eskimo Cooperative, which, among other things, markets the distinctive Eskimo stone cuts and prints produced by Cape Dorset artists.

Mr. Ryan is an artist himself, with a Toronto exhibition to his credit last year and another pending. Most of his work has featured Arctic themes, especially landscapes.

He reported back to Ottawa recently, tanned and trim, on a project that is backed with a Canadian Council grant—one of six projects providing a total of $18,000 to encourage the Eskimo to draw. He had set out in February. After distributing paper and pencils at various places on his way north, he picked up the results a few weeks later on his way back. He got mostly black - and - white drawings although he had dispensed some colored pencils. Variety was infinite.

Mr. Ryan plans to sift through the drawings he has collected. Then he probably will compile the best in a book.

### Arctic Area to Be Surveyed

GRANDE PRAIRIE, Alberta (Canadian Press) — A 28-foot flat-bottomed boat was left here for the Arctic where it will be used by Federal forestry officials in forest survey and fire fighting work in the Mackenzie River delta. The Federal Government hopes to encourage forest industry development in the region, 1,600 miles northwest of Edmonton.

# FOCUS ON HISTORIC POLAR ADVENTURE FILM

By A. H. WEILER
The New York Times

ANNALS of Antartic heroism shrouded in the mists of a half-century and only fully explored for the first time in a book published five years ago, will be produced as a feature film, starting this summer. This is the account of Sir Ernest Shackleton's "incredible voyage" (1914-1916) to reach the South Pole as set down in "Endurance," the book by Alfred Lansing published by McGraw-Hill in 1959 as well as the name of Sir Ernest's ship.

The project, which also will be called "Endurance," will be filmed in wide-screen and color by Seneca Films on lotion in Greenland and, according to Robert Gaffney, who will produce, "in as many authentic Antarctic locales as we can." William Kronick will direct from a script now being written by Mr. Lansing. Mr. Gaffney, who has produced many documentaries and several theatrical films including "The Troublemaker," explained that "we will have a cast but no 'name' players, since we plan to do the film in documentary style. It is budgeted at about $1 million and we're discussing a releasing arrangement now."

**Mr. Lansing's documenta-**

tion, it should be pointed out, is proof that the voyage was indeed "incredible." None of the 28 men on the expedition was lost or seriously hurt despite the fact that the ship was crushed by ice and most of the men were stranded short of their goal. For five months the party camped on ice floes and, later, drifted to remote Elephant Island. Sir Ernest and a picked crew then sailed to a whaling station nearly 1,000 miles away after which the rest of the party was rescued.

A new 144-foot "Endurance," approximating the size of the original craft, will be built soon at Sandefjord, Norway, where the first "Endurance" was constructed in 1910, according to Mr. Lansing. "Once it is completed," he said, "it will be sailed to Hold With Hope Bay in Greenland, which looks just like the Weddell Sea where Sir Ernest's 'Endurance' was crushed. We plan to follow this with filming in Antarctica in some of the areas where it actually happened."

*SEA OF THE BEAR—Journal of a Voyage to Alaska and the Arctic, 1921. By Lieut. Comdr. M. A. Ransom, U.S. Coast Guard (Ret.) with Eloise Katherine Engle. Annapolis: U.S. Naval Institute. Illustrated. 119 pages. $5.*

This beautiful little book is a charming, discursive narrative of seafaring and the Arctic. It brings to life again an Alaska forever gone, and a famous ship, the Coast Guard cutter Bear, which foundered in a shrieking gale off Cape Sable in 1963. A fine example of the bookmaker's art, it mates fine photographs with simple text and provides for those who love the old tall ships, long gone, profile and plan of the Bear. This is the sort of neglected or forgotten journal —a by-road of history—that the Naval Institute handles with perfection.

—HANSON W. BALDWIN.

**NAVIGATORS**

Continuing its series memorializing navigators who explored the South Seas, the Australian postal administration on Aug. 26 has issued two stamps, 7 shillings 6 pence, Capt. James Cook, and £2, Admiral Phillip Parker King. It was on Aug. 26, 1768, that Captain Cook left England in the "Endeavor." Two years later, after exploring the east coast of Australia, he rounded Cape York, and on Aug. 22, 1770, landed at Possession Island. He claimed the area for Great Britain, and gave it the name New South Wales.

Subsequent surveys of the north and east coasts of Australia were carried out by the then Captain King in the early 19th century.

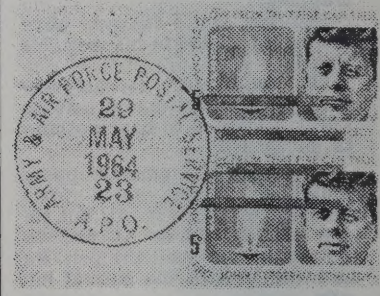
## Danish Line Orders Copters To Serve Greenland Routes

Greenlandair, a Danish airline serving Greenland, has signed a contract wth United Aircraft International to purchase three Sikorsky S-61N twin-turbine helicopters, United announced

The aircraft, equipped with 24 seats, lavatory and galley, will transport passengers and cargo on routes linking the isolated villages and settlements along the Greenland coast. Service is tentatively scheduled to begin next May. The helicopters will carry special electronic navigation and communications equipment designed to extend their operational capabilities in the region's extreme weather conditions.

The helicopters will be able to serve localities where the only landing area may be an adjacent fjord or a snow-covered field.

The distribution of the Kennedy Memorial stamp apparently was comprehensive. Sent for inspection by Lt. Henry C. Reinhard, Jr. stationed in Greenland with the USAF, was an FDC postmarked at the nation's northernmost post office. This is ARMY & AIR FORCE POSTAL SERVICE, A.P.O. 23 station.




Commenting, Lt. Reinhard wrote: "I attempted to get the cover backstamped at the Thule, Greenland post office but the Greenland postal authorities were fearful of creating a philatelic curiosity and so refused.

"Neither would they postmark a Greenland stamp if I affixed one to envelope and attempted to mail it to myself in Greenland or to someone in the U.S.A."

The A.P.O. 23 post office is 800 miles from the North Pole

**ICE ISLAND: Polar Science and the Arctic Research Laboratory. By Tim Weeks and Ramona Maher. Illustrated. 220 pp. New York: The John Day Company. $4.95.**

**Seasonal Publication**

A wintry item will come from John Day on Jan. 5 in "Ice Island: Polar Science and the Arctic Research Laboratory," by Tim Weeks and Ramona Maher. This is the story of a laboratory established by the University of Alaska under contract with the Navy on an ice island on May 23, 1961. The four-square-mile block of ice drifted over 5,000 miles in a curving path carrying it north of the Soviet Union and then eastward to the neighborhood of Greenland. The authors are a husband-and-wife team who love the frozen North.

**"SEALIFT FOR SECURITY" OPERATIONS** in the Arctic were the source of this cover from the USNS WYANDOT (T-AK92) now operating in the vicinity of Greenland. It was posted July 1 at Sonderstorm AFB by Capt. Arnie Ekblad who is a neighbor and personal friend of the addressee, Bill Schneider of Metuchen, N. J.

### Editor Gets Science Award

BOSTON, Nov. 16 (AP) — Dr. Melville Bell Grosvenor, president and editor of the National Geographic Society, received tonight the first Bradford Washburn Award for "An outstanding contribution toward a public understanding of science." The award, a gold medal with a $5,000 honorarium, was established by a member of the board of trustees of the Boston Museum of Science to honor Mr. Washburn's 25th anniversary as museum director.

# J. LOUIS GIDDINGS, ANTHROPOLOGIST

## Professor at Brown, Expert on Bering Strait, Dies

The New York Times

PAWTUCKET, R. I., Dec. 9 — Dr. J. Louis Giddings, professor of anthropology at Brown University and a widely known authority on ancient inhabitants of the Bering Strait area of Alaska, died in Memorial Hospital here today. He was 55 years old.

Dr. Giddings was injured Nov. 3 in an automobile collision in nearby Seekonk, Mass. The hospital said that determination of the cause of death awaited an autopsy.

Dr. Giddings was born in Caldwell, Tex., on April 10, 1909. He was graduated from the University of Alaska in 1932, earned his master's degree from the University of Arizona in 1941, and his doctorate at the University of Pennsylvania in 1951.

Brown University named him director of its Haffenreffer Museum of the American Indian in 1956. He became interested in Bering Strait research as a University of Alaska undergraduate in 1931 and had spent many summers excavating archeological sites at Cape Denbigh, on both sides of the Seward Peninsula and at Kotzebue Sound in Western Alaska. He had received frequent research grants from the National Science Foundation.

One of his most recent efforts was the excavation of remains left by a succession of cultures at Cape Krusenstern, near Bering Strait. A series of 114 parallel ridges extends inland from the present shoreline, each representing a former — and earlier — beach.

These ancient beaches, Dr. Giddings found, constitute a sort of "guest book" recording the various peoples who once inhabited the coast.

He also was a pioneer in dendrochronology — the establishment of tree ring chronologies. Since the spacing of rings is an index of year-to-year climate, all trees that grew in the same region at the same time show the same pattern of fat and lean years. This makes it possible to determine the precise years when ancient logs grew.

Dr. Giddings and his wife, riding a skiff, once descended the Mackenzie River and skirted the Arctic Ocean, sampling ring patterns in driftwood in an effort to push the chronology as far into the past as possible.

Dr. Giddings's studies had led him to challenge the popular scientific concept of ancient mass migrations from Siberia through Arctic North America. His research exploited his thesis that there was a "circumpolar drift" of ideas and techniques all the way from Central Siberia to Greenland but no great migration of peoples.

Dr. Giddings leaves his wife, the former Ruth Warner, and three children, all of Bristol.

# *HENRY A. LARSEN, 65, LED HISTORIC VOYAGE*

VANCOUVER, B. C., Oct. 29 (Canadian Press)—Henry Asbjorn Larsen, a retired Royal Canadian Mounted Police Superintendent who was captain of the first vessel ever to navigate the Northwest Passage from West to East, in 1942, died in a hospital here yesterday. He was 65 years old.

Mr. Larsen commanded the St. Roch, an 80-ton schooner.

Mr. Larsen visited New York in January, 1952, and told of his voyages at the Explorers Club.

The visit was made during a tour of duty with the St. Roch at Halifax, N.S., which lasted from 1950 to 1954.

In 1954, Mr. Larsen sailed the schooner back to Vancouver from Halifax via the Panama Canal. The voyage took 82 days and reportedly established the St. Roch as the first vessel ever to circumnavigate North America.

The first West to East voyage of the St. Roch started at Vancouver on June 23, 1940 and ended 28 months later. The vessel returned westward in 1944 and in 1950 it reached Halifax once again.

Mr. Larsen's police beat was said to be the largest in the world. It stretched from the Yukon to Northern Quebec and covered three million square miles.

# Dr. Reginald James Dies; 1914 Antarctic Explorer

CAPETOWN, South Africa, July 8 (AP)—Prof. Reginald William James, a member of the marooned Antarctic expedition led by Sir Ernest H. Shackleton in 1914-16, died Wednesday in Capetown. He was 73 years old.

Dr. James, a professor emeritus at Capetown University, was known for his work in X-rays and crystallography.

He sailed with Sir Ernest as physicist aboard the ship Endurance in 1914. The expedition of 28 men intended to cross Antarctica by way of the South Pole. They failed to find a landing place and were caught up in an ice pack. Dr. James and others of the group were not rescued until Aug. 30, 1916.

# JOHN L. REINARTZ, PIONEER IN RADIO

## Inventor, 70, Dead—Served on 1925 Arctic Expedition

The New York Times

FORT ORD, Calif., Oct. 6—John L. Reinartz, radio pioneer and inventor who was once called the greatest amateur operator in America, died yesterday in the Army Hospital here. He was 70 years old.

Mr. Reinartz's call letters (W1QP, W1XAM and, most recently, K6BJ) were known to generations of radio hams.

In 1925 he was the chief radio operator on the MacMillan-National Geographic Arctic expedition. He had been selected by Capt. Donald B. MacMillan because amateurs were more familiar with short wave lengths, then little used commercially.

In 1924, when he was living in South Manchester, Conn., Mr. Reinartz established radio contacts with amateur radio operators in Los Angeles and England, at a time when scientists were saying that short waves would only go short distances.

Arthur A. Collins, now president of Collins Radio, a manufacturer in Cedar Rapids, Iowa, was a 15-year-old radio enthusiast at the time of the MacMillan expedition, and kept in daily contact with Mr. Reinartz. They had kept up the friendship since.

Mr. Reinartz's experimental contact with the West Coast, Mr. Collins said, "was the beginning of the whole development of long-distance radio."

Mr. Collins described the pioneer as an "outgoing sort of a chap," and said of his first call letters, W1QP, "That's pronounced Kewpie and he kinda looked the part."

During World War II, Mr. Reinartz was in charge of radio training for the Naval Communications Reserve, with the temporary rank of captain.

In 1949 he joined Eitel-McCullough, Inc., a manufacturer whose line includes radio tubes used by hams. He headed the company's amateur services department until his retirement in 1960.

A tuning device Mr. Reinartz invented in 1921 made it possible for amateurs to build their own sets. He held about 28 other patents.

Mr. Reinartz was of French descent. He was born in Krefeld, Germany and was brought to the United States by his parents in 1907 when he was 10 years old. He became interested in radio when he was still in school in South Manchester in the days before the vacuum tube, when the crude apparatus "gave out grunts rather than signals."

He was a clerk in a dry goods store long enough to find out he didn't like it, and then went to work in a silk mill in the electrical department. It was from the mill that he left for the Arctic.

In the nineteen-twenties Mr. Reinartz had many opportunities to capitalize on his inventions, but instead gave them away. He refused to allow major radio companies to use his name in advertisements.

Mr. Reinartz was on the technical staff of QST, the magazine of the Amateur Radio Relay League. He was sometimes described as a man who had "done more for the development of high frequencies than any other man on earth."

A newspaper article published in 1926 referred glowingly to Mr. Reinartz's achievements, it closed this way:

"With moving pictures by radio ahead of us, there is no doubt that there will be another field for amateurs to tackle. But not the least of contributors to the advancement of that part of the radio art should come from men like Reinartz, who play at the game for its very fascination, and who are above all the experimenters and the scientists of tomorrow."

Mr. Reinartz is survived by his widow, Gertrude, who lives in Aptos, Calif.

# *ADM. GEORGE BRYAN, NAVY HYDROGRAPHER*

The New York Times

SCRANTON, Pa., July 14—Rear Admiral George S. Bryan, U.S.N. retired, of nearby Clark's Green, died yesterday in Moses Taylor Hospital here. He was 79 years old.

Admiral Bryan was Navy hydrographer in Washington from 1938 until his retirement in 1946. During World War II his office was responsible for directing preparations of maps of the Normandy landings and for all Pacific islands on which American forces established beachheads.

He was a 1906 graduate of the United States Naval Academy at Annapolis.

In World War I he commanded the Yangtze River gunboat Monacacy and later became fleet engineer for the Asiatic Fleet. After the war he was commander of the destroyer Yarborough, the destroyer tender Melville and the battleship Maryland.

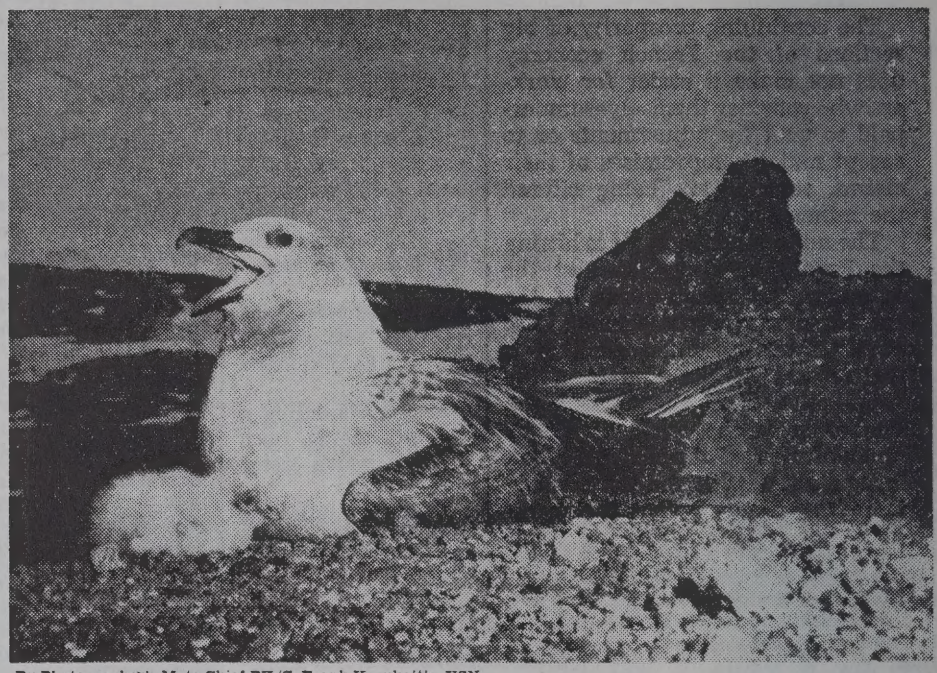
He won the Navy Cross in World War I and the Legion of Merit in World War II.

After his retirement, he joined the staff of the International Correspondence Schools as head of the school of navigation.

Surviving are his widow, the former Mary Frances Littell; two sons, Comdr. George S. Bryan Jr. and Comdr. William L. Bryan, and a brother, Ennis.

By Photographer's Mate PH/2, T. J. Regina, USN

**An Adelie penguin with built-in oars snapped at Cape Crozier.**

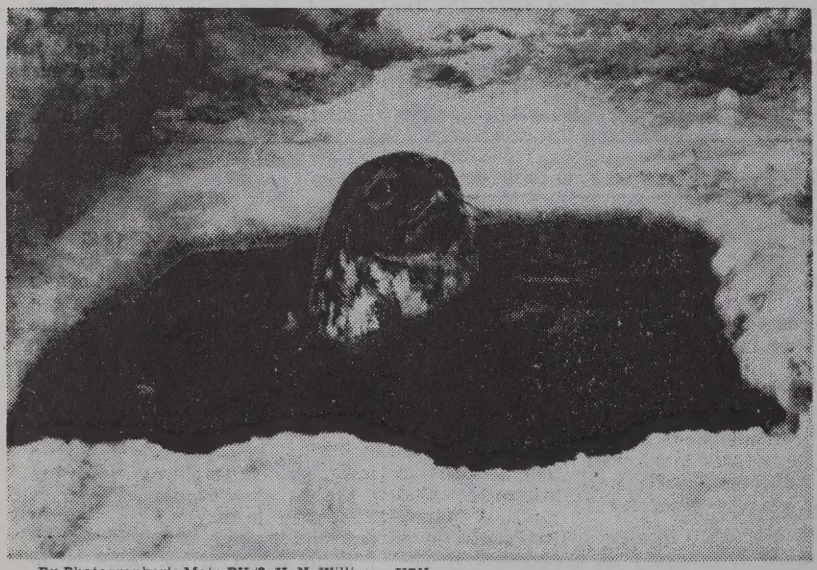


By Photographer's Mate Chief PH/C, Frank Kazukaitis, USN

**Fierce as an eagle is this female skua, screeching at a Navy photographer who managed, after a three-hour effort, to get within three feet of her nest at Cape Evans, Ross Island.**

# *These Antarcticans Favor a Frigid Climate*

## Official U.S. Navy Photographs



By Photographer's Mate PH/2, H. N. Williams, USN

**Weddell seal comes up for fresh air from its private pool at McMurdo Sound. Fully grown, it will weigh nearly 900 pounds. The man-made ice opening is used by personnel for studies in marine biology near McMurdo Station.**

By Photographer's Mate PH/2, Thomas J. Regina, USN

**An Adelie penguin with her baby chick at Cape Crozier. Adelies are the clowns of the Antarctic and often offer unusual entertainment for the men of 'Deep Freeze'; they have no fear of humans.**